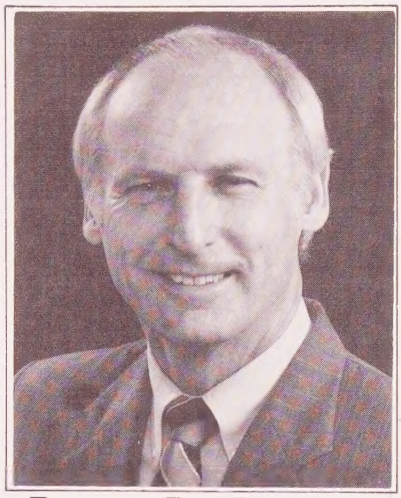
SAFETY ELEMENT

ADVANCE PLANNING PROGRAM

ENVIRONMENTAL MANAGEMENT AGENCY

COMPONENT II

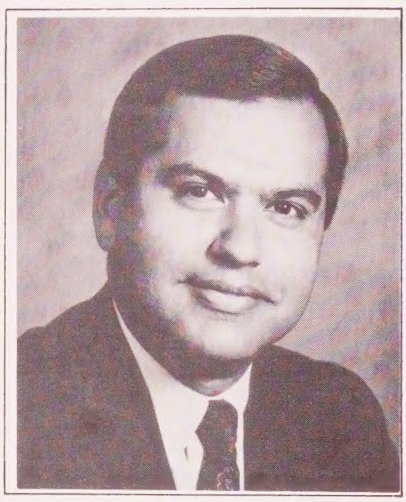
COUNTY OF ORANGE
BOARD OF SUPERVISORS



Roger R. Stanton
Chairman
First District

Harriett M. Wieder
Second District

1992



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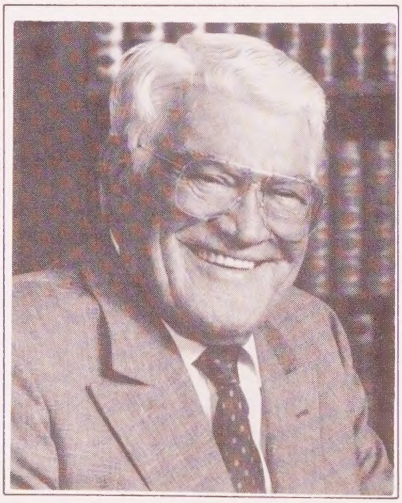

Thomas F. Riley
Fifth District

COUNTY OF ORANGE CALIFORNIA

COMPONENT II

ADVANCE PLANNING PROGRAM

SAFETY ELEMENT

County of Orange
Environmental Management Agency
Advance Planning Division

August 26, 1987

Board of Supervisors Resolution
No. 87-1186

ORANGE COUNTY PLANNING COMMISSION

First District	A. Earl Wooden
Second District	Roger Slates
Third District	Clarice Blamer
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ENVIRONMENTAL MANAGEMENT AGENCY

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Thomas B. Mathews, Director of Planning

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CHAPTER ONE: INTRODUCTION

A. Overview

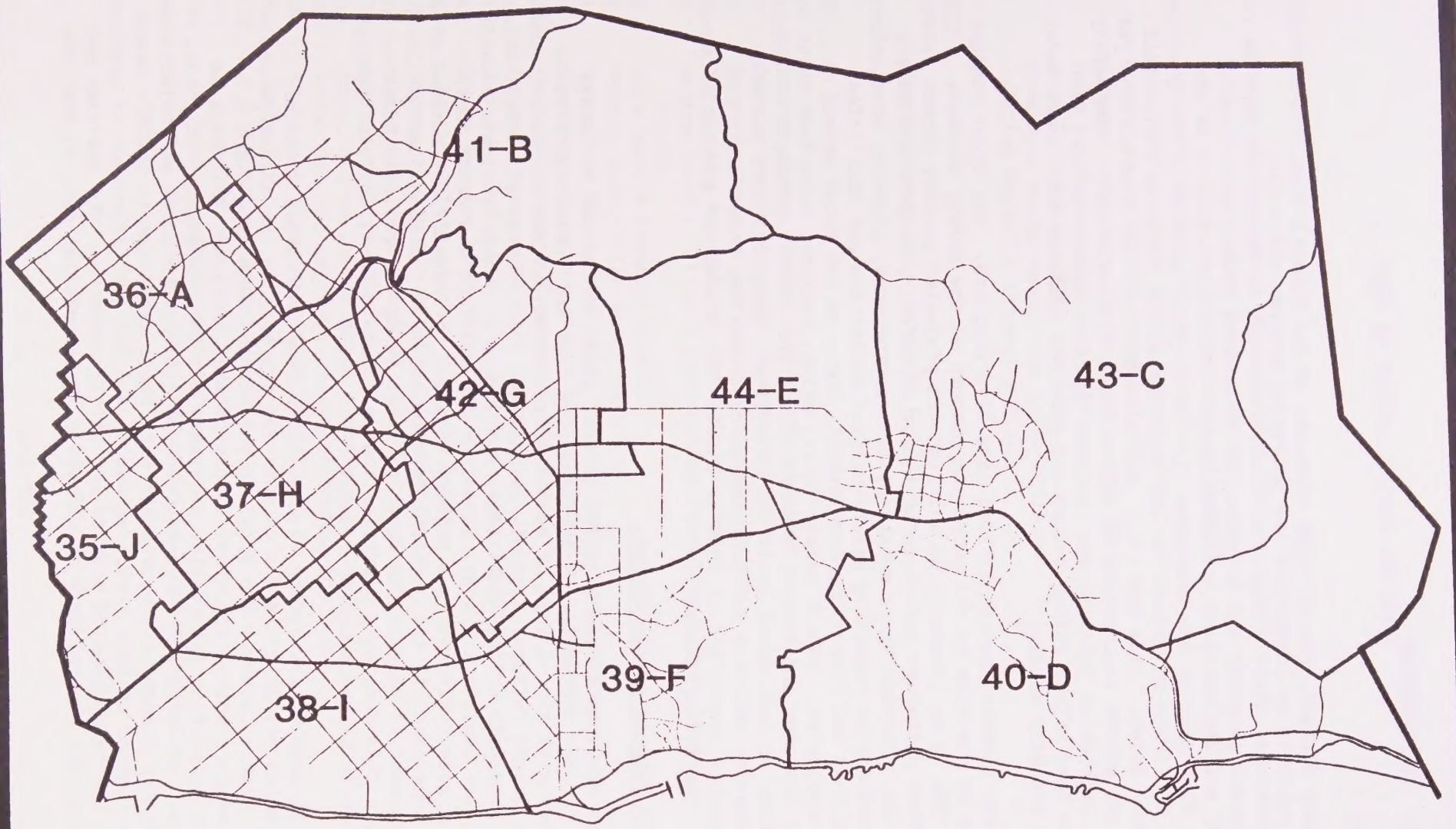
The Safety Element, one of eight elements of the General Plan, contains County policies on identified and potential hazards and safety considerations, their mitigation (i.e., reduction in damage and loss to real and personal property and minimization of adverse social and economic impacts) and implications for development. The eight elements of the General Plan provide the mid-range (15- to 20-year) portion of the planning program and focus on objectives and policies at the Regional Statistical Area (RSA) level. (See Map 1-1.) All elements have the same horizon year (2010) and growth assumptions to ensure internal consistency. The Safety Element references policies and programs in other County General Plan elements that affect safety issues and provides guidance for future safety-related planning studies.

The Safety Element text is divided into five chapters. The first chapter provides an overview of the scope and purpose of the Safety Element. Chapter Two is an inventory of existing and projected growth; growth related development patterns; and characteristics of existing hazards and safety categories. Chapter Three considers future prospects, planning constraints and opportunities regarding safety-related activities and facilities. Chapters Four and Five ("The Components") focus on two broad safety or hazard categories: public safety (fire, crime, nuclear, hazardous waste and aircraft hazards) and natural hazards (flood and seismic/geologic hazards). In addition to individual goals and objectives, these chapters provide implementation policies and programs that address the constraints and opportunities identified in Chapter Three. The appendices provide reference data for the Safety Element.

B. Scope and Purpose of the Element

The State Government Code requires general plans to include "a safety element for the protection of the community from any unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides, subsidence and other geologic hazards known to the legislative body; flooding; and wildland and urban fires." As such, the Safety Element is a primary document for identifying hazards which must be considered in the physical development of a jurisdiction. While the Safety Element is required to focus on fire, flood and geologic hazards, the Government Code does make provision that a safety element may also address other locally relevant safety issues.

A basic purpose of the Safety Element is to comprehensively inventory hazards which primarily impact persons and property in the unincorporated areas of Orange County. The scope of the Element also allows for a countywide perspective for other safety-related matters. This hazards inventory identifies information necessary for the development of goals, objectives, policies and implementation programs. The goals and objectives of the Safety Element are consistent with state requirements and are based on an assessment of safety-related needs, and the identification of problems impeding the resolution of hazards and safety concerns. The policies and programs of the element form an effective implementation plan to meet the



SAF-1-2

Orange County Regional Statistical Areas

map 1-1

established goals and objectives of the Element. The Safety Element serves to guide and direct local government decision-making in safety-related matters, and also foster coordination with regional, state, and federal policies and programs.

C. Relationship to the Advance Planning Program

1. Component I: Long-Range Planning Framework

Component I provides the long-range planning framework and general goals for the Advance Planning Program. Included within this document are broad safety goals that provide a basis for the more specific goals and policies contained in the Safety Element.

2. Component II: The General Plan Elements

The General Plan addresses a 15- to 20-year time frame. Component II of the Advance Planning Program consists of the eight General Plan elements, including the Safety Element. A major goal of the Safety Element is to mitigate the effects of real and potential hazards and safety concerns and to minimize damage and loss to real and personal property and adverse social and economic consequences. While this goal is a high priority, it must be achieved while maintaining internal consistency among the other elements of the General Plan as required by state law. Therefore, the Safety Element does not replace or supersede any of the other General Plan elements; instead, the Safety Element addresses, amplifies and supports safety-related concerns identified in the other General Plan elements.

The Safety Element is implemented by various coordinated programs that are developed to support and carry out its goals, objectives and policies. The Safety Element is the most current expression of County safety policies. It achieves internal consistency with the other General Plan elements through the use of common socio-economic projections and assumptions and the pursuit of common major goals such as compatibility between land use and natural or man-made hazards.

3. Component III: Community Profiles

The Community Profiles are the most detailed portions of the Advance Planning Program. They are short-range in scope and focus on community-level policies and programs. The Community Profiles geographically depict existing geologic hazards and flood/slope constraints.

D. Related Planning Programs and Agencies

This section summarizes the various federal, state, regional, local, and non-governmental agencies and programs that influence County planning activities regarding natural or man-made hazards or other safety-related considerations. For a complete listing of planning agencies, see Appendix B.

1. Orange County Preferred-1985 Demographic Projections

Orange County Preferred-1985 (OCP-85) Demographic Projections provide housing-, population- and employment-projection data. The projections, which have been adopted by the Board of Supervisors, provide a single data reference for policy-making and program planning.

OCP-85 is used throughout the General Plan (e.g., Land Use, Housing, and Transportation elements). Moreover, the projections are used by the Orange County Transportation Commission, Orange County Transit District, and County of Orange for all long-range planning and budgeting activities.

Regional Statistical Areas (RSAs) are the geographic units used for the development of these policy projections. These projections are disaggregated to Community Analysis Areas (CAAs) for the purpose of performing Development Monitoring Program (DMP) and Areawide Fiscal Impact System (AFIS) analyses. DMP and AFIS analyses are conducted by the County Administrative Office in order to determine the impact of existing and projected development on infrastructure facilities and fiscal resources. CAA projections are disaggregated by EMA to the Traffic Analysis Zone (TAZ) level for transportation planning purposes.

OCP-85 serves as the County's official input to the SCAG (Southern California Association of Governments) Regional Growth Forecast Policy. Growth Forecast policy is implemented through SCAG's regional planning activities, project review, and coordination with city, county, state and federal governments. The adopted growth forecast is utilized in the development of the Air Quality Management Program and the Regional Transportation Plan, which are mandated by federal and state law.

2. National and State Planning Agencies

The State Department of Mining and Geology provides Orange County with Special Study Zones Maps in accordance with the Alquist-Priolo Geologic Hazards Zone Act.

Project flood and 100-year flood plain maps are provided to Orange County by the U. S. Army Corps of Engineers (COE); Federal Insurance Rate Maps also provide information on 100-year flood plains.

The amended Federal Resource and Conservation Recovery Act (RCRA) of 1976 establishes a hazardous waste program for the state. The Federal Environmental Protection Agency (EPA) has permanently transferred the authority for program operation to the State Department of Health Services.

In 1985, a Joint Powers Authority representing the Counties of Orange, Ventura, Santa Barbara, San Bernardino, Riverside, San Diego, Los Angeles, and Imperial was established to address the siting of hazardous facilities (treatment, storage and disposal).

The California Resources Agency is an umbrella agency composed of the numerous state jurisdictions that either plan or manage the use and protection of California's resources. Included within this agency is the California Energy Commission. This agency, and the many others located under the auspices of the Resources Agency, have considerable influence on County resource planning activities and often mandate specific county programs to promote statewide resource goals (e.g., Local Coastal Plan, Air Quality Management Plans).

The Southern California Association of Governments has long been concerned with the ability of the region's air carrier system to serve the anticipated growth in air travel demand. In 1978, the SCAG Executive Committee created the Aviation Work Program Committee (AWPC0) composed of local government representatives to re-examine the region's existing and planned air carrier capacity.

A comprehensive listing of related planning agencies is provided in Appendix B of this text.

CHAPTER TWO: INVENTORY OF CURRENT CONDITIONS AND FUTURE PROSPECTS

A. Introduction

This chapter provides an insight into current county growth conditions and the manner in which future growth may be influenced by the identification and mitigation of safety considerations such as the incidence of crime, fire, hazardous materials, flooding, seismic and geologic hazards, and aircraft hazards. The chapter is divided into two sections. The first section presents a detailed inventory of current conditions and projected levels of population, housing and employment. The second section presents an inventory and analysis of county hazards for both current and projected future conditions.

B. County Growth Trends

1. Data Sources

For the purposes of the General Plan, 1980 was selected as the baseline for data collection and analysis. The prime advantage of using 1980 as the base year is the availability of census data, which serve as benchmarks for population, housing, and income trends. In addition, the primary source of land use data -- the Orange County Land Cover Survey -- was compiled in 1980. This survey was conducted by the Environmental Systems Research Institute in cooperation with the County and Southern California Edison.

The horizon year of the County's General Plan is 2010. All projections and analyses of physical and socioeconomic conditions in the county are keyed to this thirty-year time frame. Table 2-1 on the following page contains a summary of population, housing and employment trends that are expected to occur during the study period. These projections are broken down by Regional Statistical Area (RSA). Chart 2-1 graphically illustrates the relationships between RSAs for these three variables.

The source of the demographic projections is the Orange County Preferred (OCP) forecast. The most recent iteration known as Orange County Preferred Projections-1985 (OCP-85) was adopted by the Board of Supervisors on February 19, 1986. In addition to its use by County agencies, OCP-85 is the County's official input to the SCAG Regional Growth Forecast Policy. The OCP projections can be amended in the following ways: 1) concurrent with the processing of a project that is inconsistent with the projections; 2) through annual review as a part of the Development Monitoring Program; or 3) as part of the two- to three-year SCAG Regional Development Guide update process.

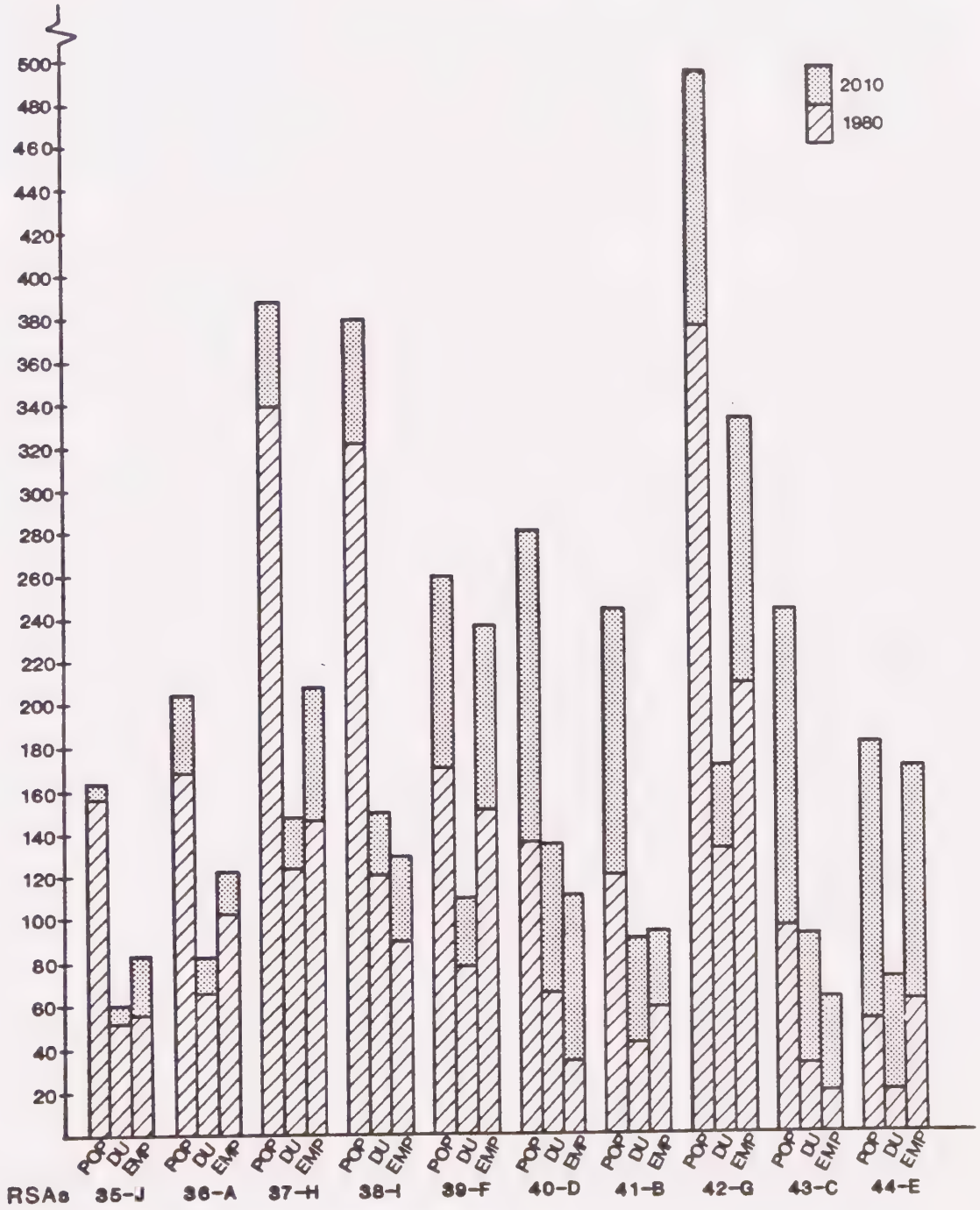
2. Development Patterns and Trends

During the past 20 years, the focal point of Orange County's growth has shifted gradually southward. In the 1950s and '60s the majority of new development occurred in the northern areas of the county such as Anaheim, Fullerton, Orange, Westminster and Fountain Valley. During the 1970s, as vacant land became more scarce in these northern areas, the center of growth shifted to the south with the rise of new communities like Irvine, Mission Viejo, and Laguna Niguel. For analytical purposes,

TABLE 2-1
ORANGE COUNTY DEMOGRAPHIC PROJECTIONS

	POPULATION		HOUSING		EMPLOYMENT	
RSA	1980[a/]	2010[b/]	1980[a/]	2010[b/]	1980[a/]	2010[b/]
35-J	156,248	165,400	52,454	59,800	55,200	86,400
36-A	168,782	202,300	64,578	80,900	100,600	125,600
37-H	338,682	389,200	124,875	145,700	146,000	212,000
38-I	321,137	378,900	119,038	150,900	90,300	133,500
39-F	170,644	257,400	74,920	112,500	146,800	237,200
40-D	134,696	279,800	66,072	134,600	32,600	109,900
41-B	116,686	245,900	39,276	86,200	54,900	94,200
42-G	377,316	488,800	130,103	167,400	211,600	336,100
43-C	95,954	242,300	32,885	93,500	17,400	62,800
44-E	52,564	181,100	17,313	69,200	60,000	172,800
COUNTY TOTAL	1,932,709	2,831,100	721,514	1,100,700	915,400	1,570,500

Sources: a/ 1980 Census
b/ County of Orange: OCP-85 Projections



POP:Population DU: Dwelling Units EMP: Employment
(NUMBERS IN 1000 s)

Orange County Socio-Economic Projections	OCP-85	CHART 2-1

North County is generally considered to be the area north and west of the Costa Mesa Freeway (State Highway 55) and contains RSAs 35-J, 36-A, 37-H, 38-I, 41-B, and 41-G. South County is represented by RSAs 39-F, 40-D, 43-C and 44-E.

Table 2-2 and Map 2-2 compare the projected population growth trends in the north and south portions of the county. During the thirty-year study period, about 56 percent of the county's net population growth is projected to occur in the southern RSAs. Although the rate of growth in North County is declining, this area will still contain the majority of the county's population throughout the study period. In 1980, 77 percent of the county's 1,932,709 people lived in the north. By 2010, it is expected that this figure will fall to 66 percent.

The difference in growth between north and south becomes more apparent when the internal growth rates of the two areas are compared. Between 1980 and 2010, the population of the northern portion of the county is expected to grow by 391,649, or 26 percent. South County will add 506,742 persons during the same period; however, this represents an increase of 112 percent.

The projected increase in the county's housing stock reflects the population trend identified above. (See Table 2-3 and Map 2-3.) Due to a projected decline in the average household size from 2.68 to 2.57 persons per dwelling unit countywide, the number of new units expected to be built between 1980 and 2010 represents a slightly higher percentage increase than that for the population itself. Consequently, while the county's population is projected to rise by 46 percent (898,391 persons) between 1980 and 2010, the housing stock is expected to increase by 52 percent (379,186 units) over the same interval.

During the period between 1980 and 2010, the spatial distribution of new residential construction is expected to be skewed slightly toward South County. Fifty-eight percent of the projected 379,186 new units built in the County between 1980 and 2010 are expected to be located in the southern area. Although the northern portion of the county is growing much less rapidly than the south on a percentage basis, by 2010 nearly two-thirds (63 percent) of all housing units will still be found in the northern RSAs.

County employment patterns are very similar to the population and housing distributions described above. (See Table 2-4 and Map 2-4.) As of 1980, 72 percent of the county's 915,400 jobs were located in North County. This is very similar to the population distribution identified in Table 2-2. By 2010, a moderate southward shift in the employment distribution is projected to occur. The magnitude of this shift is nearly equal to the anticipated shift in population and housing. South County is projected to receive about 50 percent of the new jobs created between 1980 and 2010. Again, this figure is similar to the projected differential growth in population and housing. Overall, the county's employment base is projected to grow faster than population, with a 72 percent gain between 1980 and 2010. This compares to a projected population growth of 46 percent during the same period.

TABLE 2-2

PROJECTED POPULATION GROWTH TRENDS
NORTH COUNTY vs. SOUTH COUNTY
1980 - 2010

	North County[a]			South County[b]			County Total		
	1980	2010	Change	1980	2010	Change	1980	2010	Change
Total Population	1,478,851	1,870,500	+26%	453,858	960,600	+112%	1,932,709	2,831,100	+46%
Pct. of Total Population	77%	66%	-11%	23%	34%	+11%	100%	100%	-
Growth	-	-	391,649	-	-	506,742	-	-	898,391
Pct. of Growth	-	-	44%	-	-	56%	-	-	100%
Average Household Size	2.79	2.71	- 0.08	2.37	2.34	-0.03	2.68	2.57	-0.11

Notes: a/ Includes RSAs 35-J, 36-A, 37-H, 38-I, 41-B and 42-G
b/ Includes RSAs 39-F, 40-D, 43-C and 44-E

Sources: 1980 Census
County of Orange: OCP-85 Projections
Orange County EMA/Advance Planning Division

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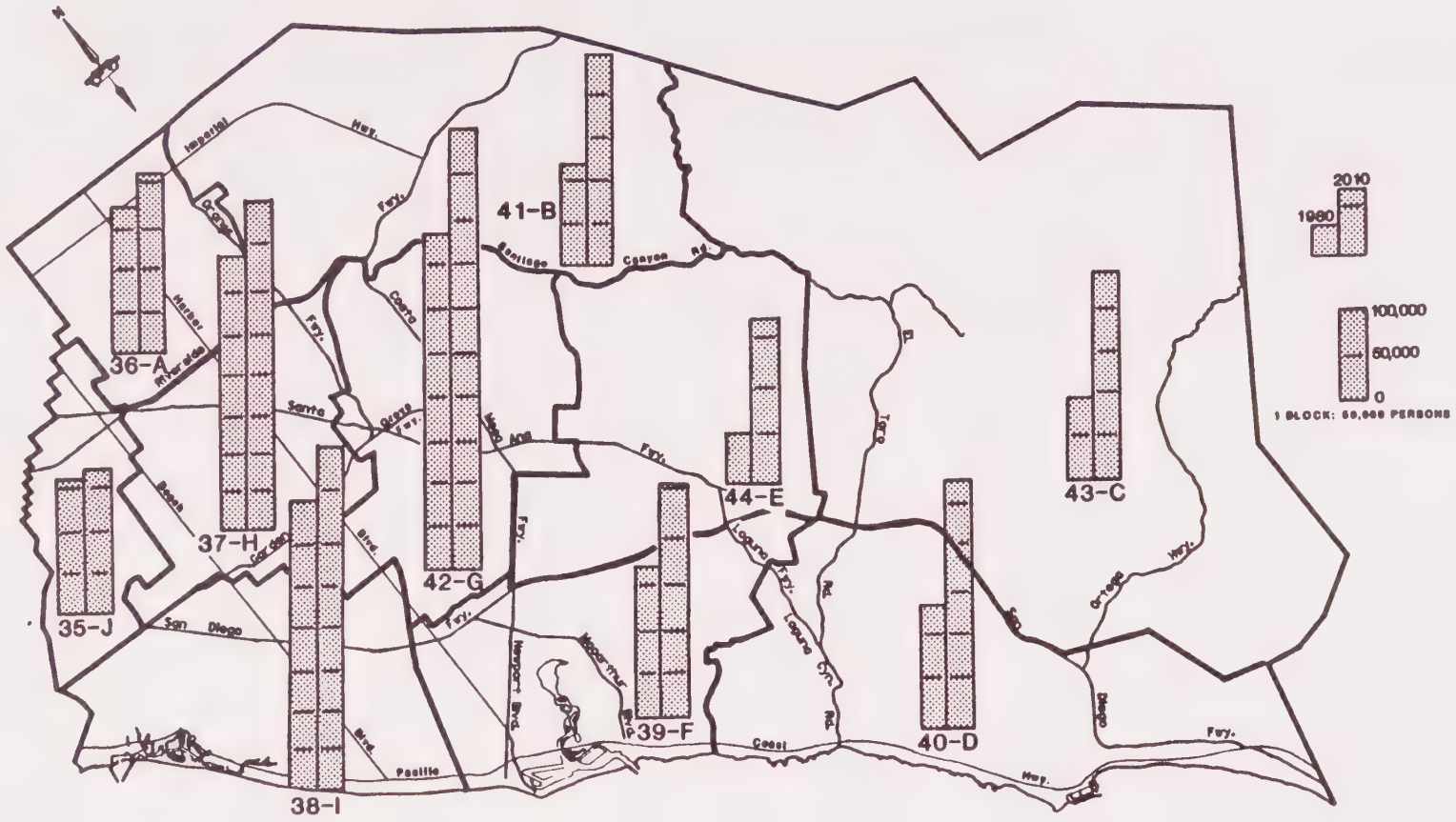

SAF-2-6

POPULATION
By Regional Statistical Area

SOURCE: Orange County
OCP-85

MAP
2-2

TABLE 2-3

PROJECTED HOUSING GROWTH TRENDS
NORTH COUNTY vs. SOUTH COUNTY
1980 - 2010

	North County[a/]			South County[b/]		
	1980	2010	Change	1980	2010	Cha
Total Units	530,324	690,900	+30%	191,190	409,800	+1
Pct. of Total	74%	63%	-11%	26%	37%	+1
Growth	-	-	160,576	-	-	218
Pct. of Growth	-	-	42%	-	-	5

Notes: a/ Includes RSAs 35-J, 36-A, 37-H, 38-I, 41-B and 42-G
b/ Includes RSAs 39-F, 40-D, 43-C and 44-E

Sources: 1980 Census
County of Orange: OCP-85 Projections
Orange County EMA/Advance Planning Division

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HOUSING UNITS
By Regional Statistical Area

SOURCE: Orange County
OCP-85

MAP
2-3

TABLE 2-4

PROJECTED EMPLOYMENT GROWTH TRENDS
NORTH COUNTY vs. SOUTH COUNTY
1980 - 2010

	North County[a]			South County[b]			County Total		
	1980	2010	Change	1980	2010	Change	1980	2010	Change
Total Employment	658,600	987,800	+50%	256,800	582,700	+127%	915,400	1,570,500	+72%
Pct. of Total Employment	72%	63%	-9%	28%	37%	+9%	100%	100%	-
Growth	-	-	329,200	-	-	325,900	-	-	655,100
Pct. of Growth	-	-	50%	-	-	50%	-	-	100%

Notes: a/ Includes RSAs 35-J, 36-A, 37-H, 38-I, 41-B and 42-G
b/ Includes RSAs 39-F, 40-D, 43-C and 44-E

Sources: Orange County EMA/Advance Planning Division
County of Orange OCP-85

EMPLOYMENT
By Regional Statistical Area

SOURCE: Orange County
OCP-85

MAP
2-4

SAF-2-10

As the County continues to grow, the demand for public safety will increase. Services and programs designed to improve the safety of Orange County residents as the urbanized areas expand will experience increasing pressure. This pressure will be met through various methods. For example, adequate methods of crime protection already exists in the urbanized areas, but it is necessary that affirmative steps be taken to inform the public of available services and programs. The demand for other safety related services, such as flood control, cannot be met enirely within the borders of Orange County. The County must ultimately depend on cooperation with other counties and agencies for the provision of an adequate supply of this service. One of the major purposes of the Safety Element is to provide a clear statement of County policy so that timely steps can be taken to ensure that an adequate supply of all necessary services and facilities will be available to meet the County's growth needs.

C. Inventory of Existing and Potential Public Safety Issues/Hazards

Public safety considerations in planning provide protection for people and property from loss due to natural or man-induced hazards or illegal acts.

This section focuses upon four public safety concerns that affect the physical and social development of Orange County. They include crime, fire hazards, hazardous materials and aircraft. The information presented in the following section provides background data for the goals, objective policies and programs beginning on page SAF-4-1.

1. Crime

a. Introduction

A review of the nation's crime statistics for the past decade reveals a steady increase in virtually every significant crime category. The rise in crime is alarming and disturbing.

A basic ingredient of the quality of life sought by existing and potential residents of an area like Orange County rests in the feeling that a community is secure and safe from criminal activity. To a growing urban place like Orange County, the concern of law enforcement is to devise measures for reducing the level of crime activities and to promote the idea that Orange County is a safe place to raise families, conduct business and recreate.
The two primary forms of crime deterrence most commonly used are suppression and prevention. Crime suppression may be defined as the application of proactive and investigative techniques by which law violators are aggressively identified, arrested and prosecuted.

By contrast, the traditional law enforcement approach to crime is reactive. With the exception of crimes committed in the presence of an officer, the police usually investigate major crimes after the fact. Proactive police efforts are usually limited to narcotics and crimes of vice.

There are two interrelated aspects of prevention which deserve discussion. First is prevention of crime, a major concern of policing and prosecution agencies. This aspect focuses on offenses and is directly related to crime reduction. Second is the prevention of criminality which focuses upon the offender. Responsibility for this aspect of prevention is placed on society as a whole, specifically on social and correctional agencies and the courts.

In 1983, Orange County law enforcement agencies participated in the Orange County Crime Reduction Program. The program was designed to fine-tune the investigative techniques and crime prevention practices of the participating agencies through the initiation of proactive efforts for the control and prevention of offenses. Additional goals of the program include activities to increase arrests; improved methods to clear cases and prosecutions; programs to promote citizen involvement; methods to increase the recovery of

stolen property; and methods that improve the operational effectiveness of criminal justice personnel.

b. Existing Conditions

1) Crime Statistics

The Orange County Sheriff's Department maintains detailed records on crimes committed within its service areas in Orange County. The records are divided into two major categories: Part I and Part II offenses. Part I offenses consist of the most serious crimes including homicide, rape, robbery, assault, burglary, larceny, and auto theft. The more serious Part I crimes not only present the greatest threat to the public safety due to frequency of occurrence, but also pose the greatest problem in apprehension and arrest. Part II offenses include forgery, counterfeiting, stolen property, etc. In 1985, 11,725 Part I offenses and 65,076 Part II offenses were committed in the unincorporated area of Orange County and the contracting cities of San Juan Capistrano and Villa Park. Of these totals, arrests were made in 2,328 Part I and 59,981 Part II cases. The crime statistics for 1986 reveal that Part I and Part II offenses have increased by 918 and 13,491 respectively since 1985. Arrests in these two categories were also increased for the same period. In 1986, 3,242 arrests were made for Part I offenses and 70,047 Part II arrests were made.
(see Tables 2-5 and 2-6)

The Orange County Sheriff Department plans to increase its efforts in the reduction of narcotics and narcotic-related crimes. Though narcotics are not a major problem in the County, they are a contributing factor in various other crimes. In 1986, the Sheriff Department and the police forces of Anaheim, Santa Ana and Huntington Beach initiated the Regional Narcotics Suppression Program. The program currently includes 11 local and 3 federal agencies enjoined to reduce narcotics and its influences within the crime environment.

It is anticipated that a youth-oriented drug education program will also be developed by the Sheriff's Department. This program will be designed to involve students in an "Anti-Drug Campaign" focusing primarily on Orange County public schools.

PART I OFFENSES	1985 Actual Offenses	1985 Number Cleared	1985 Percent Cleared	1986 Actual Offenses	1986 Number Cleared	1986 Percent Cleared
1. CRIMINAL HOMICIDE:						
A. Murder & Non-Negligent Manslaughter	6	3	50.0	8	5	62.5
B. Negligent Manslaughter	2	0	0.0	2	3	150.0
2. RAPE:						
A. Forcible	36	25	69.4	44	30	68.2
B. Attempt Rape	25	9	36.0	No Statistics Available		
3. ROBBERY:						
A. Weapon	119	40	33.6	119	58	48.7
B. Strongarm	56	21	37.5	97	43	44.3
4. AGGRAVATED ASSAULT	429	304	70.9	621	424	68.3
5. BURGLARY:						
A. Residence	2,685	324	12.1	2,808	448	16.0
B. Non-Residence	1,173	329	28.0	1,361	326	24.0
C. Locked Vehicle	1,772	67	3.8	1,732	73	4.2
6. LARCENY:						
A. Grand Theft	1,227	117	9.5	1,230	558	45.4
B. Petty Theft	3,427	940	27.4	3,624	1,073	29.6
7. AUTO THEFT:						
A. Felony	768	149	19.4	997	201	20.2
GRAND TOTAL	11,725	2,328	19.8	12,643	3,242	25.6

SOURCE: Orange County Sheriff Biennial Report 1985-1986

TABLE 2-6

PART II OFFENSES	1985 Actual Offenses	1985 Number Cleared	1985 Percent Cleared	1986 Actual Offenses	1986 Number Cleared	1986 Percent Cleared
OTHER ASSAULTS	1,314	1,096	83.4	1,975	1,638	85.2
FORGERY & COUNTERFEITING	1,694	1,410	83.2	1,932	2,193	113.5
EMBEZZLEMENT & FRAUD	98	54	55.1	71	50	70.4
STOLLEN PROPERTY - REC. LOSS	31	32	103.2	57	39	68.4
WEAPONS LAWS	247	230	93.1	311	244	78.5
PROSTITUTION/COMMERCIAL VICE	4	4	100.0	3	1	33.3
SEX OFFENSES (Except 2/13)	539	215	39.9	718	319	44.4
OFFENSES AGAINST FAMILY-CHILD	1,135	914	80.5	1,417	1,124	79.3
NARCOTIC LAWS	1,304	920	70.6	1,395	865	62.0
LIQUOR LAWS	761	761	100.0	929	879	94.6
DRUNKENNESS	116	112	96.6	103	94	91.3
DISORDERLY CONDUCT	434	130	30.0	679	147	21.6
VAGRANCY	242	72	29.8	227	53	23.3
GAMBLING LAWS	15	0	0.0	0	0	0.0
DRIVING WHILE INTOXICATED	173	150	86.7	193	159	82.7
ROAD/DRIVING VIOLATIONS	6,335	6,118	96.6	5,598	5,411	96.7
PARKING VIOLATIONS	31,058	31,058	100.0	40.767	40,767	100.0
OTHER VEHICLE LAWS	15,938	14,774	92.7	18,001	14,189	78.8
MISCELLANEOUS VIOLATIONS	3,638	1,931	53.1	4,191	1,830	43.7
GRAND TOTAL	65,076	59,981	92.2	78,567	70,047	89.2

SOURCE: Orange County Sheriff Biennial Report 1985-1986

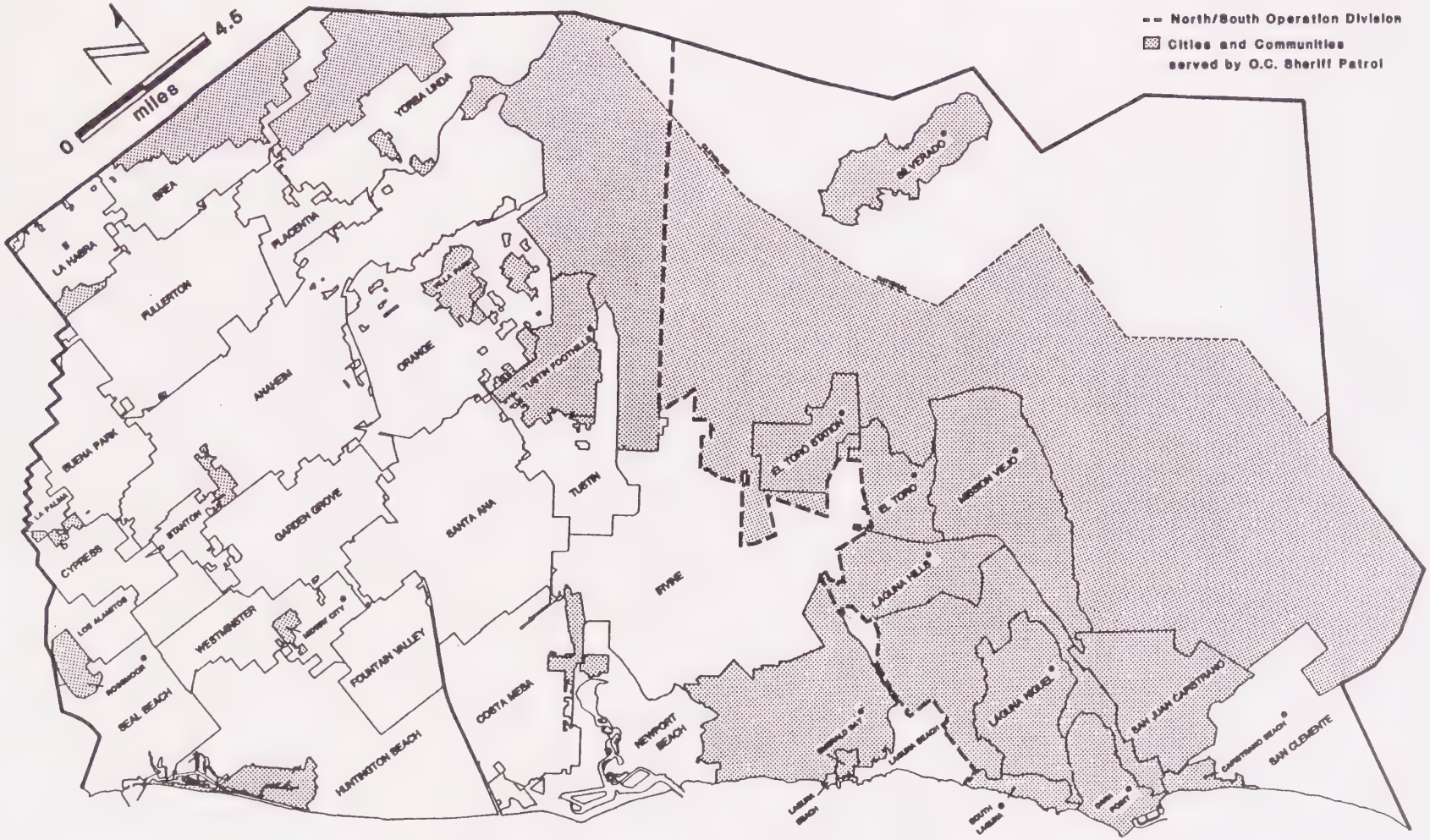
2) Sheriff's Department

Since the 1940s, the Sheriff's Department has grown from a small, rural, county police force to a modern law enforcement agency employing nearly 1,500 people. Currently, the Orange County Sheriff-Coroner Department (OCSCD) provides police patrol and investigative services to the unincorporated areas of Orange County and the contracting cities of San Juan Capistrano and Villa Park. (See Map 2-5). In addition, the OCSCD has developed a Mutual Aid Plan with each of the 26 law enforcement agencies in the incorporated cities. Under the Mutual Aid Plan, formalized in March 1968 by the Orange County Chiefs of Police and Sheriff's Association, law enforcement agencies agree to provide additional necessary assistance during immediate local police emergencies. The Department's patrol function is organized geographically into two divisions, the North and South Operations Divisions.

A North Operations Division is stationed in the Sheriff's permanent headquarters in the City of Santa Ana. This division's service territory covers the unincorporated County islands, John Wayne Airport, areas north of Brea and Yorba Linda, the foothill area east of Orange and north of Tustin, the Irvine Coastal area north of Laguna Beach, and the City of Villa Park. As of 1984, the total population served was approximately 101,000.

A South Operations Division is headquartered at the Sheriff's substation in Laguna Niguel. The service territory for this division covers generally the areas east of Irvine and south of Laguna Beach. Major communities served with contiguous patrol service include El Toro; Laguna Hills; Mission Viejo; Laguna Niguel; South Laguna; Dana Point; Capistrano Beach; the Foothill area of the Santa Ana Mountains; Rancho Santa Margarita and the City of San Juan Capistrano. As of 1984, the total population served was about 215,000. Patrol services in this area account for 70% of patrol activity in unincorporated Orange County.

The Orange County Sheriff's Department maintains a number of specialty divisions and agencies. These specialty units were established to specifically address the wide variety of policing and investigative needs of the County's growing population. These units include the Investigative Division, responsible for case follow-up and development for prosecution; the Air Support Bureau, providing aerial support for County fire units as well as their law enforcement duties; the Hazardous Devices Squad, responding to calls of suspected bombs, explosive materials, and abandoned military or other ordinance; the Forensic Science Services Division, responsible for evidence collection, scene reconstruction, interpretation, and specimen analyses; the Coroner Division, responsible for investigating all violent, sudden, unexpected and unexplained deaths; the Transportation Bureau, responsible for routing of inmates to county and state facilities; and the Harbor Patrol, responsible for law enforcement, fire fighting on both land and water, and cliff/water rescues.



NOTE: This map is for informational purposes only and is not a part of this element.

ORANGE COUNTY CITIES & COMMUNITIES SERVED BY O.C. SHERIFF

SOURCE: Orange County

MAP 2-5

c. Summary

Orange County is a growing urban community. As its population grows, the incidence of crime is expected to increase. The degree to which crime influences the growth and development of Orange County is in part the responsibility of the Sheriff's Department. The effectiveness of existing and future programs will be a key ingredient in the communities' perception that Orange County is a safe and secure place.

2. Fire

a. Introduction

This section of the Safety Element examines the threat of fire to urban areas, wildlands and the urban/wildlands interface. Fire is a constant threat in all parts of the county. Map 2-6 depicts the fire hazard areas identified by the Orange County Fire Service. It is the responsibility of the Orange County Fire Department to meet the fire threat challenge for present and future development and residents.

Information pertinent to fire department facilities and facilities planning may be found in the Public Services and Facilities Element of the General Plan.

b. Existing Conditions

1) Wildland Fires

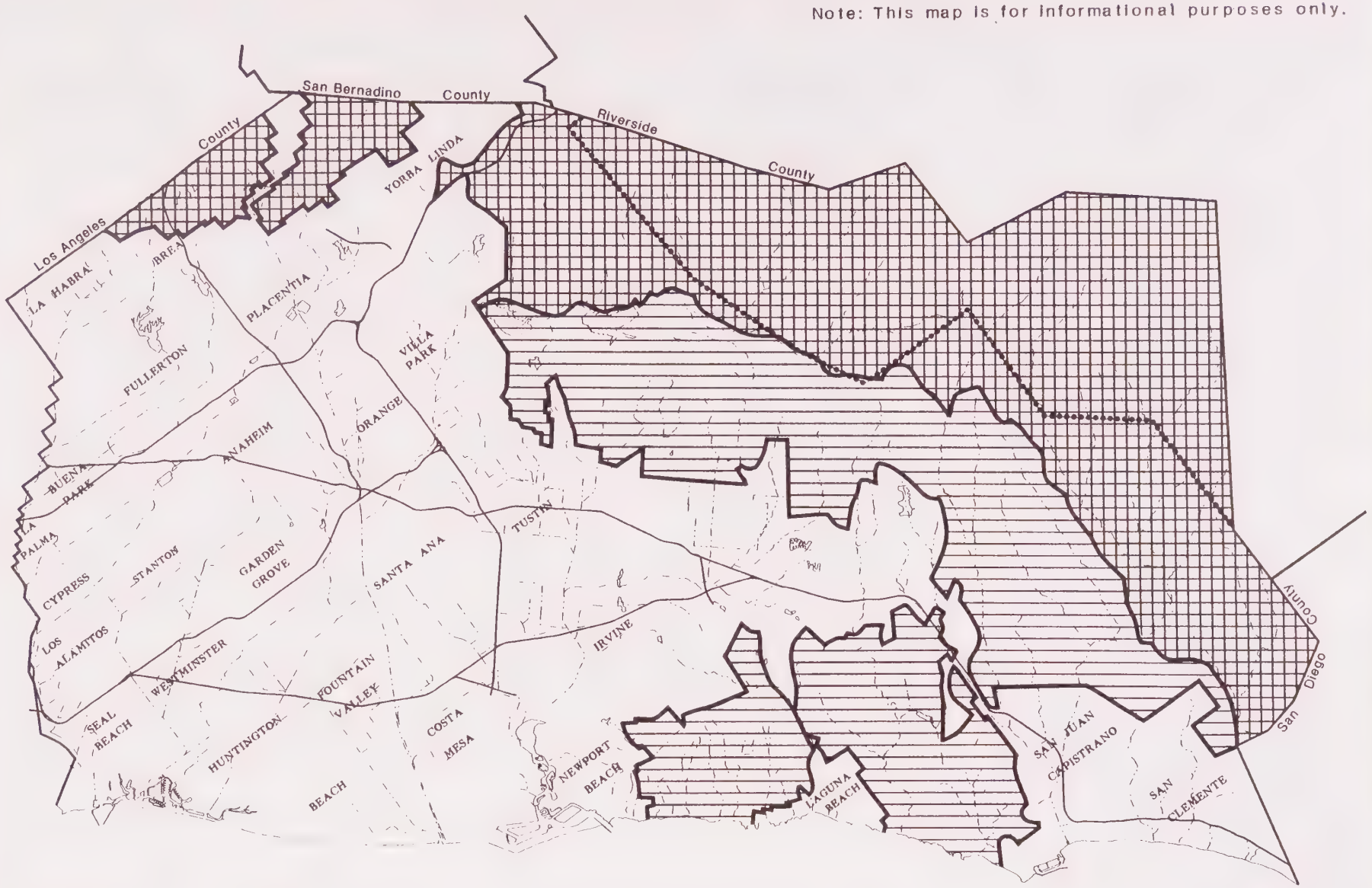
The major objective of wildland fire defense planning is to prevent wildland fires from starting and, if unsuccessful, to minimize the damage to natural resources and structures once a wildland fire starts. Some of the more successful programs/ordinances currently in effect which contribute to the success of wildland fire prevention activities are:

- Closure of private lands in hazardous fire areas to public access.
- Uniform Building Code prohibition of combustible roof covering materials.
- Construction and maintenance of community and private fuel modification programs.
- Vegetative Management Program (controlled burning)
- Weed Abatement Program
- Fire Prevention Education Programs

There are a number of natural conditions which might increase the possibility of wildland fires. Three such conditions are the type and condition of wildland vegetation, the topography of the area and weather elements.

A relatively large portion of the county is covered by natural (though modified) vegetation. Of these different vegetation types, coastal sage scrub, chaparral and grasslands reach some degree of flammability during the dry summer months and, under the right conditions, during the winter months. For example, as chaparral gets older, twigs and branches within the plants die and are held in place. A stand of brush 10- to 20-years of age usually has enough

Note: This map is for informational purposes only.



SAF-2-20

FIRE HAZARD SEVERITY ZONING

source:
ORANGE COUNTY FIRE DEPT.
1984

map
2-6

dead material to produce rates of spread about the same as in grass fires when the fuels have dried out. In severe drought years, additional plant material may die, contributing to the fuel load. There will normally be enough dead fuel accumulated in 20- to 30-year old brush to give rates of spread about twice as fast as in a grass fire. Under moderate weather conditions that produce a spread rate of one-half foot per second in grass, a 20- to 30-year old stand of chaparral may have a rate of fire spread of about one foot per second. Fire spread in old brush (40 years or older) has been measured at eight times as fast as in grass, about four feet per second. Under extreme weather conditions, the fastest fire spread in grass is 12 feet per second or about eight miles per hour.

Topography has considerable effect on wildland fire behavior and on the ability of firefighters and their equipment to take action to suppress those fires. A fire starting in the bottom of a canyon may rush quickly to the ridge and become large, before initial attack forces can arrive, simply because of topography. Rough topography greatly limits road construction and road standards and accessibility by ground equipment. Steep topography also channels air flow, creating extremely erratic winds on lee slopes and in canyons.

Weather elements have many complex and important effects on fire intensity and behavior. Wind is of prime importance; as wind velocity increases, the rate of fire spread also increases. Relative humidity (i.e., relative dryness of the air) also affects fire intensity and behavior. Drier air leads to drier vegetation and increases the likelihood that the vegetation will ignite and burn. Precipitation (its annual total, seasonal distribution, and storm intensity) has further effects on the moisture content of vegetation and hence important effects on fire ignition and behavior.

Many wildland fires have been associated with adverse weather conditions. In the 1982 Gypsum Canyon fire, 17 homes were lost and 18,000 acres were burned, leaving an estimated 16 million dollars in damage. The Santa Ana Winds during the time of the fire were approximated at 50-55 mph, making the fire difficult to contain.

Reasons for control difficulty associated with wildland fires include the following:

- Adverse weather conditions
- Large quantities of combustible fuel
- Inaccessible terrain
- Nonexistent or very limited water supply
- Large fire frontage-dispersing fire forces

2) Urban Fires

Fire prevention is the major fire department activity in urban areas. The fire department objective is to prevent fires from starting. Once a fire starts the object is to minimize the damage to life and property. Urban fire prevention programs that are designed to achieve this fire prevention objective are as follows:

- Adoption and aggressive enforcement of the most recent Uniform Fire Code.

- Development of a comprehensive master plan to ensure that staffing and facilities keep pace with growth.

- Plan check of new construction to ensure that all construction features meet code requirements.

- Active participation in Subdivision Committee and other planning activities.

Some of the most difficult fire protection problems in the urban area are as follows:

- Multiple story, wood frame, high density apartment developments

- Large contiguous developed areas with combustible roof-covering materials

- Storage, handling, and use of hazardous materials on site

- Natural disasters

The character of the existing built-up area and future land use determines the location of fire stations, number of companies, manning of such companies, and future fire protection facility needs. Structural conditions also influence the quantity of water needed for fire protection (fire flow) and hydrant distribution.

Features of structural conditions that affect fire control include the following:

o Type of construction and use of buildings
o Area of building (ground floor area)
o Number of stories
o Type of roof covering material
o Exposures to the building

The Uniform Building Code regulates all of the above features and requires certain built-in fire protection devices when maximum allowable areas or heights are exceeded or the building use presents a life or property protection

problem. Automatic fire extinguishing systems provide an effective and successful private fire protection system which can minimize loss of life and property caused by fires. These systems operate with 94-97% efficiency thereby reducing the demands or public fire protection needs.

Other principal factors that can contribute to major fire protection problems include the following:

- o Delayed detection of emergencies
- o Delayed notification of the fire agency
- o Response time of emergency equipment
- o Street structure (private, curvilinear and dead-ended)
- o Multiple-story, frame, apartment and condominium units
- o Inadequate and unreliable water supply with poor hydrant distribution
- o Inadequate code enforcement and code revisions which lag behind fire prevention knowledge

3) Urban/Wildlands Interface

In an effort to alleviate fire dangers near the interface between urban development and wildlands, the construction of fuel modification zones (firebreak, fuelbreak or greenbelt) has been required. The continued application of this method does have drawbacks and, therefore, is not the only acceptable solution. In addition to the associated impacts created by some fuelbreak installations, there are usually impacts on wildlife, unique vegetation and, in some cases, to the watershed cover as deep-rooted chaparral species are replaced by shallow-rooted grasses. Fuelbreaks are costly to install, require expensive maintenance to insure their success during a wildfire, and offer protection primarily to structures with direct exposure to the wildland. This inequity in protection versus installation/maintenance costs represents a very important point regarding the natural resource/urban development interface conflict. Fire prevention measures to reduce the level of risk to structures with wildland exposure must be developed within the design of the residential development rather than in the natural resource.

c. Orange County Fire Department

The Orange County Fire Department is entrusted with the protection of a large segment of the County's population and land area. The Orange County Fire Department currently serves a population in excess of 600,000 people and protects an area of approximately 526 square miles, including the unincorporated county areas and the cities of Cypress, Irvine, La Palma, Los Alamitos, Placentia, San Juan Capistrano, Tustin, Villa Park, Seal Beach, Yorba Linda and portions of Newport Beach. The County provides fire and emergency medical services with approximately 600 full-time personnel and an equal number of volunteers who live in these communities. The Orange County

Fire Department also provides paramedic service to Laguna Beach and a portion of Stanton. There are presently six stations located specifically in or adjacent to the wildland areas. Nine new stations are needed within the next 4 years in order to provide an adequate level of fire protection and paramedic services in Orange County (see Map 2-7).

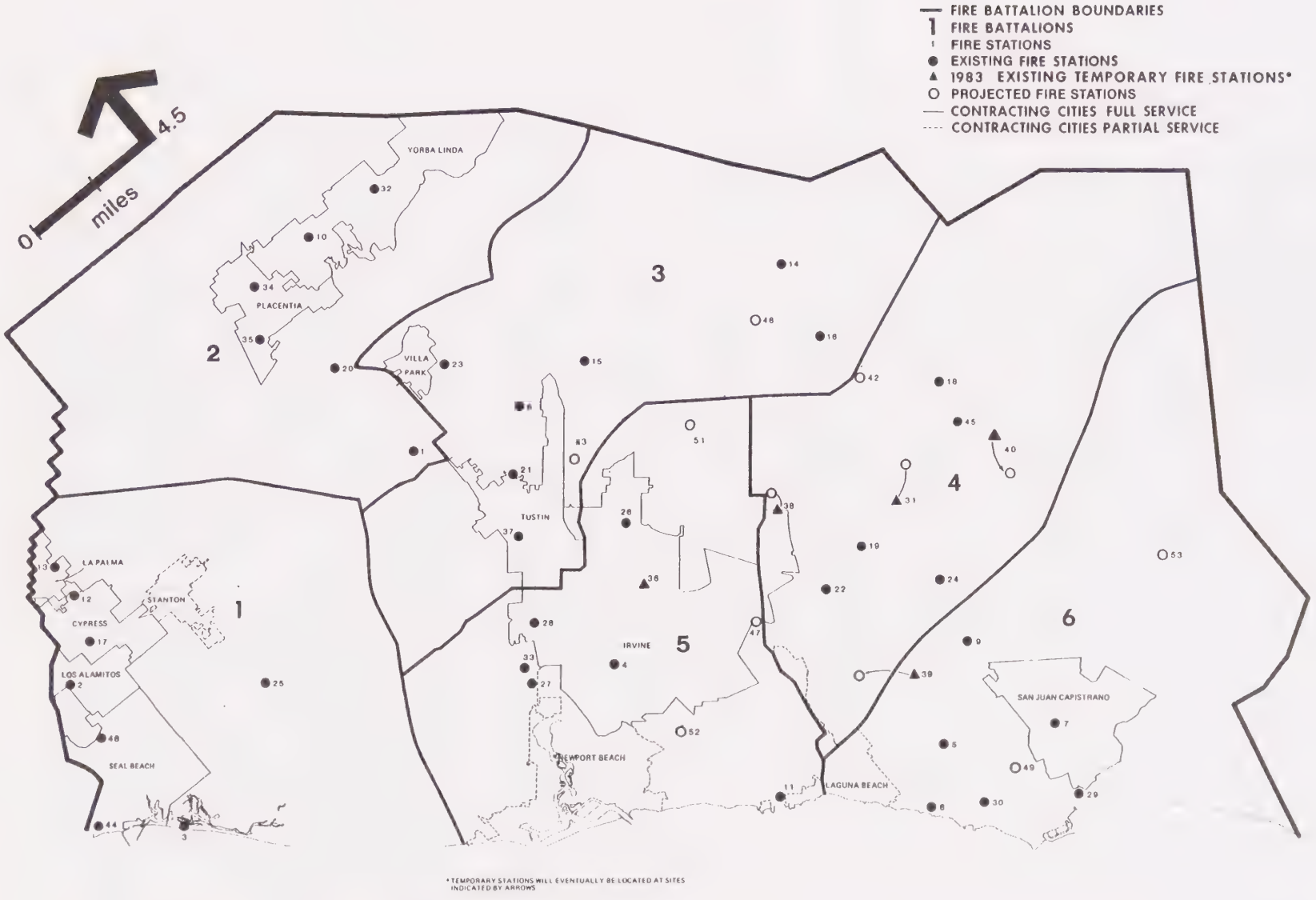
Orange County's firefighters are technically trained and highly skilled fire protection professionals. They provide a multitude of services. Comprehensive pre-emergency planning, fire protection engineering and training programs currently in progress will ensure the department's ability to meet future service demands.

d. Summary

Effective fire control and prevention depends upon understanding the nature of fire and its environment. Within wildland areas, the fire environment is a complex system of topography, weather and fuel. Topographic and weather factors are variables generally beyond man's influence. However, man can and does affect vegetation which is commonly the fuel in wildland fires. Proper land management and construction techniques with wildland fire areas can reduce the incidence and severity of wildland fires.

Urban fires pose a growing threat to property and life within Orange County. As the County urbanizes, the incidence of structural fires increases. Within urban areas, building materials, stored materials, materials used in commercial and industrial operations, density and intensity of development pose difficult fire protection problems. Improving the planning and construction of new developments (e.g., use of fire safe materials, fire detection and fire protection devices) coupled with public education and the retrofitting of older structures with fire protection devices are viewed as means to reduce the incidence and effects of urban fires.

Fires which occur along the urban/wildlands interface combine the threats posed by urban and wildland fires. Techniques necessary to reduce the effects of these two types of fires must be used in combination to reduce the effects of fires along the interface.



Note: This map is for informational purposes only.

ORANGE COUNTY FIRE DEPARTMENT

source: COUNTY OF ORANGE

map 2-7

3. Hazardous Materials

Orange County, among the most rapidly growing counties in California, continues to experience residential, employment and economic growth. However, this growth does have its costs. Virtually all sectors of the County's economy are users of materials that, if improperly handled, stored, or disposed of, can pose health and environmental problems.

No master list of hazardous materials exists which can be agreed upon by all agencies that manage or regulate them. Lists which exist will change as more is learned about the effects of hazardous substances or as new substances become part of our technology. In addition, definitions of hazardous materials also vary from source to source. The current descriptions used in Federal and State legislation include the following:

a. A hazardous material is one which is either ignitable, reactive, corrosive, toxic, or any combination of these properties (Resource Conservation and Recovery Act).

b. A hazardous material is a substance or combination of substances which, because of its quantity, concentration or physical, chemical or infectious characteristics may either:

   - o Cause, or significantly contribute to an increase in mortality, or an increase in serious irreversible or incapacitating reversible illness; or

   - o Pose a substantial present or potential hazard to humans or the environment (State Health and Safety Code, Chapter 6.5).

c. A hazardous material is an injurious substance, including pesticides, herbicides, toxic metals and chemicals, liquified material gas, explosives, volatile chemicals and nuclear fuels (California Government Code).

Exposure to some hazardous substances can result in acute or chronic health effects for the public such as respiratory problems or carcinogenicity. For example, over a long period of time, ingestion of drinking water contaminated by accidentally or illegally discharged hazardous waste can result in adverse health effects. Recognizing, therefore, the importance of providing for the safe management of hazardous materials, it is the purpose of this section of the Safety Element to discuss five major aspects of the broad hazardous materials environment: hazardous materials, hazardous waste, infectious waste, radioactive material and nuclear materials (San Onofre Nuclear Generating Station). These discussions also recognize the need for public access to general, unbiased information concerning all aspects of hazardous materials. Related hazardous materials issues involving siting of management facilities or land planning policy will be addressed as appropriate in the General Plan Land Use and the Public Services and Facilities (PSF) elements.

a. Hazardous Materials

1) Description

Hazardous materials are usable substances which, when put in contact with the environment, can adversely affect living organisms. Health effects can develop due to short- or long-term exposure. Hazardous materials, which can be ignitable, reactive, corrosive or toxic, can also cause contamination of the environment when releases occur.

2) Sources/Locations of Hazardous Materials

Hazardous materials are used in all segments of our society. Hazardous material users include manufacturing and service industries, agriculture, military bases, hospitals, schools and households.

Hazardous materials used by these societal segments are normally stored in secured, on-site areas, in small containers or large aboveground or underground storage tanks. There are approximately 9,500 underground storage tanks storing over 60 million gallons of hazardous materials at 2,875 facilities in Orange County.

3) Transportation/Routes

The major transportation routes in Orange County include the freeway system, surface streets, and railroads. These routes are used daily to transport hazardous materials from suppliers to users. On these routes, transportation accidents involving hazardous materials can occur. The threats posed by a transportation accident involving hazardous materials include explosions, physical contact by emergency response personnel, and exposure to the public via airborne exposure.

The Federal Department of Transportation (DOT)is the primary regulatory authority for the interstate transport of hazardous materials. The DOT regulations establish criteria for safe handling procedures (e.g., packaging, marking, labeling, placarding, and routing). Criteria also exist regarding personnel qualifications and training, inspection requirements, and equipment specifications. The California Highway Patrol enforces the intrastate transport of hazardous materials and hazardous wastes.

Another major hazardous materials transportation mode in Orange County is that of underground pipelines. These pipelines predominately transport crude or refined petroleum, gasoline, and jet fuel. The major threats posed by this transportation method include explosions, fire and contamination of groundwater potentially used as a source of drinking water.

The regulatory agency responsible for enforcement as well as inspection of pipelines transporting hazardous materials is the California State Fire Marshall's Office, Hazardous Liquid Pipeline Division. Under mandate from Title 49 of the Code of Federal Regulation, the agency is charged with compliance review:

- o Inspection and enforcement
- o Pipeline failure and investigation
- o Pipeline training and certification

Locally, the Orange County Fire Department has emergency response authority. Major pipeline spills or leaks occurring in the county which cause fire, explosion, injury, or fatality must be reported to the National Department of Transportation located in Washington, D.C. and to the State Office of Emergency Services.

4) Hazardous Materials Management

a) Underground Storage Tank Program

The Orange County Health Care Agency (OCHCA) has been designated by the Board of Supervisors as the agency to enforce the Underground Storage Tank (UST) program. The OCHCA Underground Storage Tank Program regulates approximately 7,000 of the 9,500 underground tanks in Orange County. This program does not regulate underground tanks in the cities of Santa Ana and Orange which implement their own programs. The program was established in 1984 in accordance with the State Underground Storage Tank Law which mandated counties or cities to establish such a program. The State mandate was in response to the increasing incidences of groundwater contamination by leaking underground tanks statewide.

The purpose of the Underground Storage Tank Program is to protect public health and the environment from potential sources of contamination of the groundwater by regulating underground storage tanks containing hazardous materials. The comprehensive program implemented by OCHCA includes conducting regular inspections of underground tanks; oversight of new tank installations; issuance of permits; regulation of repair and closure of tanks; ensuring the mitigation of leaking underground storage tanks; pursuing enforcement action; and, educating and assisting the industries and general public as to the laws and regulations governing underground storage tanks.

b) Hazardous Materials Disclosure Program

The Hazardous Materials Disclosure Program began as a direct result of two major hazardous materials incidents: the tragedy in Bhopal, India in December 1984, and the three day fire at the Larry Fricker pesticide warehouse in Anaheim in June, 1985.

Under mandate from the California Health and Safety Code, the Orange County Fire Department is the designated Agency to 1) inventory the distribution of hazardous materials in commercial or industrial occupancies, 2) develop and implement area emergency plans to respond to a hazardous materials incident, and 3) require businesses that handle hazardous materials to develop business emergency plans to deal with a fire or release of these materials. The information disclosed by the industrial community is stored in a computerized data base and is made available to fire and police response personnel, the Sheriff-Coroner Department, the Health Care Agency, all hazardous materials response teams in the county, and the planning departments of the cities served by the Orange County Fire Department.

Title 4 of the Orange County Codified Ordinances mandates an orderly program for the acquisition of basic information on the use and disposal of hazardous materials in the county. By contractual agreement or resolution of the individual city, the Orange County Fire Department administers the provisions of the State law (AB 2185 amended by AB 2187 and 3777) and County Ordinance 3552 in the unincorporated areas and in thirteen of the incorporated cities of the county. The remaining thirteen cities have adopted their own ordinances and are administering similar programs themselves.

c) Hazardous Materials Planning and Coordination

On February 7, 1984, the Orange County Board of Supervisors established the Hazardous Materials Task Force (HMTF) to review the County's hazardous materials activities and make recommendations to ensure effective coordination and control of countywide resources. The work begun by the HMTF continues under the Hazardous Materials Program Office (HMPO) of the Orange County Fire Department.

The functions and responsibilities of the Hazardous Materials Program Office include the following:

- Facilitate the coordination of various parts of the County's hazardous materials program; assist in coordinating County hazardous materials activities with outside agencies and organizations including various State, Federal, special districts, industry and community agencies and groups that impact or are involved with hazardous materials management issues/activities.

- Provide comprehensive, coordinated analysis of hazardous materials issues including the needs and priorities of all the various organizations involved in hazardous materials activities.

- Direct the preparation, implementation and modification of the County's Hazardous Waste Management Plan as required by State law (Tanner Bill, AB 2948).

- Act as a clearinghouse for information and increase public awareness of hazardous materials issues/ activities.

b. Hazardous Wastes

1) Description

The use of hazardous materials in the manufacture and use of many products considered essential to our economy result in the production of hazardous wastes which must be handled and disposed of in a safe manner to avoid harming human health and the environment. Hazardous wastes are commonly hazardous materials for which no further use is intended. Hazardous wastes can be solids, liquids, gases or sludges. A major issue concerning hazardous wastes is the potential accidental release of these substances. These releases can occur during any stage of handling, but particularly during storage and disposal.

2) Hazardous Waste Generation

Orange County, considered part of the Los Angeles region, is within the third highest hazardous waste generation area in California. The Department of Health Services (DOHS) rankings identify the Southern San Joaquin Valley as the second highest generator and the San Francisco Bay area as the highest. Together, these three regions account for 90% of the statewide annual hazardous waste generation. (See map 2-8.) In 1983, 10.2 million tons of hazardous waste were estimated by the DOHS to be produced in California each year, the Los Angeles region accounting for 2,110,457 tons per year (21.5%) with 489,041 tons (5%) coming from Orange County alone. (See Table 2-7.) In 1986, on passage of the Tanner Bill, State and local agencies began a process aimed at developing concise statewide hazardous waste management. The Tanner process will help to create a more comprehensive means of recording hazardous waste generation and tracking hazardous waste disposal. Currently, the 1983 DOHS County data is being updated for inclusion in the County Hazardous Waste Management Plan (presently in draft form).

More than 5,000 Orange County businesses - from yacht repair shops to defense contractors - produce wastes that can pose dangers as immediate as burns or as latent as cancer, if they are disposed of improperly. These 5,000 firms currently generate approximately 100-150 million gallons of hazardous waste annually. The majority of hazardous waste generators are

Note: This map is for informational purposes only.

HAZARDOUS WASTE FACILITIES
NEEDS ASSESSMENT REGIONS

source:
STATE DEPARTMENT OF
HEALTH SERVICES 1983

map
2-8

Table 2-7

Hazardous Waste Generation in California (Tons/Year)

LOS ANGELES REGION

COUNTY	WASTE MANAGED ON SITE	WASTE SENT OFF SITE	TOTAL WASTES
Los Angeles	1,073,282	420,732	1,494,014
Orange	446,345	42,696	489,041
Riverside	5,732	25,236	30,968
San Bernardino	43,503	18,756	62,259
Ventura	11,255	22,920	34,175
Regional Totals	1,580,117	530,340	2,110,457

SACRAMENTO REGION

COUNTY	WASTE MANAGED ON SITE	WASTE SENT OFF SITE	TOTAL WASTES
El Dorado	-	-	-
Placer	43	264	307
Sacramento	127,588	23,340	150,928
San Joaquin	17,780	15,492	33,272
Sutter	1	60	61
Yolo	15	528	543
Regional Totals	145,427	39,684	185,111

SAN DIEGO REGION

COUNTY	WASTE MANAGED ON SITE	WASTE SENT OFF SITE	TOTAL WASTES
San Diego	290,187	44,268	334,455
Regional Totals	290,187	44,268	334,455

SAN FRANCISCO BAY REGION

COUNTY	WASTE MANAGED ON SITE	WASTE SENT OFF SITE	TOTAL WASTES
Alameda	391,871	43,536	435,407
Contra Costa	2,617,098	181,752	2,798,850
Marin	118	516	634
San Francisco	9,547	5,388	14,935
San Mateo	206,346	16,584	222,930
Santa Clara	1,235,800	79,740	1,315,540
Solano	71,179	19,032	90,211
Regional Totals	4,531,959	346,548	4,878,507

SOUTHERN SAN JOAQUIN REGION

COUNTY	WASTE MANAGED ON SITE	WASTE SENT OFF SITE	TOTAL WASTES
Fresno	2,804	41,280	44,084
Kern	2,084,285	157,752	2,242,037
King	2,000	6,684	8,684
Regional Totals	2,089,089	205,716	2,294,805

Source: Statewide Assessment of Hazardous Waste Management Facility Siting Requirements, State Department of Health Services, September 1983.

located in three cities well-known for their industrial activities - Santa Ana, Anaheim and Irvine. However, all of the cities in Orange County have a number of hazardous waste generators, mostly small quantity generators. Of the 5,000 permitted hazardous waste generators, approximately 4,500 of these are small quantity generators; for example, automotive body shops, dry cleaners, photo labs, etc. There is a growing need to develop affordable treatment alternatives to avert the potential cumulative effects of disposal by small quantity waste generators.

3) Hazardous Waste Disposal

a) Disposal Facilities

Hazardous waste land disposal facilities are classified by the State Water Resources Control Board as Class I or Class II-1, based on each site's hydrogeological characteristics and projected waste acceptance. Prior to the 1984 Resource Conservation and Recovery Act (RCRA) amendments which call for a phased ban on land disposal of untreated waste, Class I facilities could accept virtually all types of hazardous waste, while Class II-1 facilities were allowed to accept only specified types of hazardous waste. Until November 30, 1984, California had seven operating Class I land disposal facilities (Map 2-9). Since that time, the BKK Landfill in West Covina has been closed due to increasingly restrictive State regulations, the harsh economics of hazardous waste land disposal and the threat of potential future liabilities. Much of the hazardous waste produced in Orange County and the rest of Southern California was transported to the BKK site. Since the closure of the BKK site, Orange County's hazardous waste is transported to the nearest sites at Casmalia in northern Santa Barbara County and at Kettleman Hills in Kings County, as depicted in Map 2-10, or to facilities in other states.

In Orange County, there are a number of sites where hazardous waste has been disposed of both legally and illegally which requires cleanup or mitigation. Currently, nine (9) sites have been identified in Orange County as abandoned hazardous waste sites which are eligible to be funded for cleanup pursuant to the State Hazardous Substances Cleanup Bond Act of 1984 (Superfund) (see Map 2-11). In addition to these nine (9) sites, 800 additional abandoned sites are being examined by the State DOHS as potentially containing hazardous wastes.

Furthermore, an OCHCA survey of all dumps and landfills located in the county was conducted in 1980, this survey report identified 92 waste disposal sites in the county, the majority of which have been used for the disposal of municipal refuse and inert materials. A small percentage of hazardous waste is suspected to be present as a result of disposal of household hazardous waste.

Note: This map is for informational purposes only.

STATEWIDE HAZARDOUS WASTE FACILITIES CLASS I DISPOSAL

source: GOVENOR'S OFFICE OF APPROPRIATE TECHNOLOGY 1981

map 2-9

Note: This map is for informational purposes only.

SAF-2-35

REGIONAL CLASS I DISPOSAL SITES

source: ORANGE COUNTY H.M.P.O. 1986

map 2-10

Note: This map is for informational purposes only.

1- AMF Turboscope ,Westminster (precise location unavailable)
2- As-Con Landfill
3- Continental Moulding
4- Metropolitan Circuits
5- Orange County Steel Salvage
6- McColl Site
7- Phil's Plating
8- Seal Beach Naval Weapons Station
9- Marine Corps Air Station, Tustin

ORANGE COUNTY SUPERFUND SITES

source: COUNTY OF ORANGE

map 2-11

Also of significance are 285 sites in the county that have been identified as hazardous waste sites as a result of underground tanks leaking and contaminating either the soil and/or groundwater. This number has been increasing and is expected to continue to increase in the foreseeable future.

In recognition of the importance of responsible hazardous waste management, the County is undertaking several activities to address hazardous waste issues and to eliminate the potential for misuse of existing sanitary landfills for hazardous waste disposal. Past efforts have included both the adoption of the County Industrial Waste Ordinance and establishment of the Water Pollution Department. Currently, increasing State and local regulation, hazardous waste management codes, liability and financial cost are creating pressure on the generators of hazardous waste to either reduce, recycle or treat the hazardous waste being generated.

b) Illegal Dumping

Illegal dumping takes on many forms including disposal on plant property, on vacant land or to the sewers. In addition, the Orange County Water District has identified incidences of localized groundwater contamination resulting from inadvertent release of virgin hazardous materials.

The number of hazardous waste sites requiring cleanup is expected to increase due to the following: a possible increase in illegal disposal due to the phased closure of most of the hazardous waste landfills to untreated hazardous waste and a significant increase in costs to dispose, treat, or recycle; increased awareness and reporting by the public; and greater implementation of programs by OCHCA and other agencies. In addition, the mitigation of such sites is technically complex and can take several years. This can result in costs to responsible parties, if they can be identified, that are prohibitive. However, monitoring of storm sewers by EMA and the groundwater by the Orange County Water District has indicated that any widespread illegal disposal of hazardous waste to the groundwater has not endangered this resource to a significant extent.

4) Transportation Routes

The major transportation routes in Orange County include the freeway system and the surface streets. These routes are used daily to transport hazardous waste for disposal. The threats posed by an accident involving hazardous waste include explosions, physical contact by emergency response personnel, and exposure to the public via airborne exposure.

The Department of Transportation (DOT) has established criteria for safe handling procedures during intra- and interstate transport, i.e., packaging, marking, labeling, placarding, and

routing. Criteria also exist regarding personnel qualifications and training, inspection requirements, and equipment specifications. Hazardous waste haulers must be registered with the State Department of Health Services and inspected by the California Highway Patrol.

5) Orange County Hazardous Waste Management

a) Hazardous Waste Management Plan Development

Because past hazardous waste management practices failed to assess, in many cases, the long-range health risks to the general population of prolonged exposure to toxic substances, stricter regulatory standards and more sophisticated measuring techniques are being applied to old hazardous waste landfill operations. As a result, significant contamination is being found. As a means of mitigation, the Environmental Protection Agency (EPA) under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), also referred to as the Superfund, is actively pursuing a program of uncontrolled hazardous waste site assessment; stabilization of sites imminently threatening to public health; and, remedial cleanup of sites receiving priority ranking.

In California, the State has identified over 200 sites. EPA's cleanup costs average $7.2 million per site from which the State has earmarked up to $10 million per year for cleanups since 1981. To date, few cleanups have been completed due to a lack of consensus on "how clean is clean" and what is the best technology to use to actually clean up sites.

1980 also saw the implementation of far reaching regulations to control the disposal of hazardous wastes. One such piece of legislation was the Resource Conservation and Recovery Act (RCRA) Amendments of 1984. These amendments radically changed hazardous waste management and considerably improved the control of hazardous wastes. The new RCRA includes 48 congressionally mandated statutory deadlines that go into effect either before the end of 1987 or by early 1988. The most well known of these provisions is the 1990 ban on disposal of untreated hazardous waste to landfills. Additionally, after this date interstate shipment of hazardous wastes is prohibited from states which have not developed a plan to manage the treatment and storage of hazardous waste generated within its boundaries.

In anticipation of the shortage of hazardous waste disposal facilities in Southern California, State and local elected officials initiated a Southern California Hazardous Waste Facility Study in 1981. By 1985, Orange County and six other counties (Imperial, Riverside, San Bernardino, San Diego, Santa Barbara and Ventura; plus representation from cities in those counties) founded the Southern California

Hazardous Waste Management Authority. Los Angeles County and Kern County attend meetings, but have not officially joined the Authority.

The purpose of the Authority is to provide local jurisdictions a framework within which to establish and implement an equitable allocation of hazardous waste management facilities called for in the regional Action Program. The role of the Authority is to coordinate implementation of programs and siting of facilities sufficient to safely manage hazardous waste in Southern California.

As part of its participation in the Authority, Orange County drafted a hazardous waste management plan to serve as a beginning point for discussing and developing a comprehensive system of hazardous waste management for the County. At the same time the Draft Plan project was approved by the Board of Supervisors, the Governor signed the Tanner Bill, AB 2948. This bill established a State policy on the use of hazardous waste landfills and provided a schedule for moving away from their use as disposal sites for raw, untreated chemical wastes. This law created a set of programs and procedures to facilitate the siting and permitting of treatment and residual repository facilities through local level hazardous waste management planning. The Tanner Bill also provides for the establishment of an Advisory Committee comprised of members representing different sectors of society. The Committee is responsible for overseeing the Draft Plan development and approval process. Provisions dealing with an expeditious administrative process for appealing land use decisions for off-site, multi-user hazardous waste facilities and extending some "seed money" to assist in their planning efforts were also established in this bill.

The Board of Supervisors endorsed the provisions of the Tanner Process on February 24, 1987 (Resolution #87-221). The Board concluded that implementation of the Tanner Process would enhance the hazardous waste management planning activities already begun through the auspices of the Southern California Hazardous Waste Management Authority.

The Tanner Bill process includes a time frame that must be adhered to by Orange County and other authorities submitting plans. The process culminates in the DOHS approving or disapproving the submitted Hazardous Waste Management Plan (HWMP). Within 90 days after DOHS approval of plan, the County shall either incorporate the plan by reference into their general plan or enact an ordinance requiring all applicable zoning, subdivision, conditional use permits and variance decisions be made consistent with the HWMP.

In accordance with the Tanner Bill time frame and in order to offer an option to previous forms of hazardous waste disposal, the Orange County Hazardous Materials Program Office established a two phase project. The first phase consisted of a series of one-day events called toxic Roundups at which residents disposed of unwanted houshold toxics. The Toxic Roundups were a means of providing public education to increase public awareness in segregation, disposal and proper handling of household hazardous waste, and water quality issues.

As an ongoing program, 4-5 collection stations will be established throughout the county by October, 1987 for the collection of household and small generator wastes. The program will be a joint venture of the County, cities and solid waste haulers. Each collection station will offer Saturday collection hours 4-5 times a year.

b) Orange County Health Care Agency (OCHCA) Hazardous Waste Program

In 1982, OCHCA conducted a study in Orange County to determine the number of hazardous waste generators, the amount of hazardous waste being generated, and the means of storage and disposal. The study concluded that there was a large volume of hazardous waste being generated and disposed of illegally and that there was a need for a comprehensive hazardous waste management program in Orange County. In response to these findings, the Orange County Board of Supervisors in 1983 established the OCHCA Hazardous Waste Management Program to reduce the threat of exposure to the general public and to protect the environment.

The purpose of the Waste Management Program is to protect the public and the environment from exposure to hazardous wastes and hazardous materials stored in leaking or potentially leaking underground storage tanks. The comprehensive program includes conducting routine inspections of hazardous waste generators; conducting investigations of complaints of illegal hazardous waste storage and disposal; responding to emergency incidents involving both hazardous materials and hazardous waste; and oversight of cleanups from leaking underground storage tanks and hazardous waste. This program is also responsible for pursuing enforcement action, where warranted, and educating and assisting the industries and general public as to the laws and regulations governing hazardous wastes. The laws and regulations governing hazardous waste are the California Health and Safety Code, Chapter 6.5 and the California Administrative Code, Title 22.

c) Proposition 65 Program

The Environmental Health Division of the Orange County Health Care Agency also oversees the implementation and

enforcement of Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986. Section 4 of this law requires designated government employees, as of January 1, 1987, to disclose illegal discharges or threatened illegal discharges of hazardous waste likely to cause substantial injury to public health and safety. Information is to be reported to the Health Officer and Board of Supervisors within seventy-two (72) hours or criminal and civil penalties could be faced. The Health Officer in turn makes the information available to the news media and the public.

Under the mandate of Proposition 65, OCHCA/Environmental Health has been designated by the Health Officer to receive the reports of hazardous waste discharges from all designated employees. The Proposition 65 Compliance Program implemented by OCHCA includes assessing these hazardous waste discharge reports, utilizing approved guidelines and criteria to determine if the discharge poses a threat to public health and safety; updating the Board of Supervisors as required; ensuring those discharges requiring additional follow-up or enforcement will be referred to the appropriate regulatory agency as needed; and, if necessary, reporting the discharge to the news media to be made available to the public.

c. Infectious Wastes

1) Description

Infectious wastes are defined as those medical wastes which contain potentially communicable pathogenic organisms. These medical wastes could include the following: laboratory wastes; pathologic specimens (including human or animal tissues and blood elements); surgical specimens; equipment, instruments, utensils, and other disposable materials likely to transmit etiologic agents; human dialysis waste materials; carcasses of animals infected with etiologic agents; and any other material which, in the determination of the facility infection control staff, presents a significant danger of infection because it is contaminated with etiologic agents. Etiologic agents are defined as those types of microorganisms or viruses which cause, or significantly contribute to the cause of, increased morbidity or mortality of human beings.

2) Sources/Location of Wastes

Currently there are approximately 163 regulated facilities in Orange County which generate in excess of 4,500 tons of infectious waste annually. These facilities include hospitals, doctors' offices, the County Morgue, laboratories, etc.

Potential hazards at these locations range from improper identification of infectious waste to a spillage of liquid etiologic cultures in areas accessible to the public. Exposure to these types of waste could lead to the public contracting a

disease depending upon the agent and exposure. Additionally, the public may be exposed to human pathogens as a result of accidents in the work place, streets and highways, etc. The County Fire Department has developed emergency procedures for contact and clean-up.

3) Transportation Routes

The major transportation routes in Orange County include both the freeway system and surface streets used daily to transport infectious waste for disposal. Potential accidents involving infectious waste can occur on these transportation routes. The number of accidents which occur and the amount of infectious waste spilled is unknown due to the fact that this information has never been compiled. The major threat posed by a transportation accident involving infectious waste is exposure to emergency response workers and the public which could result in contraction of a wide range of diseases.

4) Infectious Waste Management

The OCHCA Infectious Waste Program was established in 1982 in response to a large increase in the number of incidents involving the illegal disposal of infectious wastes in County landfills, on roadways, etc. This potential exposure to infectious waste was recognized as a threat to landfill workers and citizens of the County.

The purpose of the Infectious Waste Program is to protect the public from exposure to etiologic agents which cause disease by detecting and reducing the incidences of illegal storage and disposal of infectious waste. The Infectious Waste Program implemented by OCHCA includes conducting regular inspections of infectious waste generating facilities, investigating complaints regarding illegal storage disposal of infectious waste, pursuing enforcement action where warranted and educating facilities and the public as to the laws and regulations governing infectious wastes activities. The laws and regulations governing infectious waste are the California Health and Safety Code, Chapter 6.5, and the California Administrative Code, Title 22, Article 13.

d. Radioactive Material

1) Description

Radioactive material, another form of hazardous substance, is any material which emits ionization radiation spontaneously. The increasing volume and variety of high and low level radioactive materials that are generated, stored, or transported in Orange County create potential hazards, due to the threat of accidental release of radiation. Ionizing radiation can damage living cells, leading to somatic injury or harmful genetic effects. Excessive amounts of radiation can contribute to or cause an increase in serious illness and/or mortality. Sources of potential exposure range from a small spill inside a facility to a radioactive plume of smoke from a major fire.

Radioactive material incidents require specialized technical expertise which varies depending on the materials involved and the type of incident. The resources and personnel required to react to a radioactive materials incident may involve various local, special district, state and federal agencies. The specific outline of first responders can be found in the Orange County Emergency Plan.

2) Sources/Locations of Materials

Radioactive materials are used in all segments of our society. The county has 175 specific licensees who use sealed and unsealed sources of radiation. Sources of radioactive material users include manufacturing and service industries, agriculture, hospitals, schools, and military bases. The military bases in Orange County all have the potential to store and transport radioactive material in the form of fissionable material. The county also has a large gamma ray sterilization facility located in the Irvine-Tustin area that utilizes radioactive materials to sterilize equipment and food.

3) Transportation Routes

Freeways

The major transportation routes in Orange County are the freeway systems and the surface streets. These routes are used daily to transport radioactive materials from suppliers to users. More than 10 transportation accidents involving radioactive material are estimated per year (not including minor traffic accidents). The threats posed by a transportation accident involving radioactive materials include physical contact by emergency response personnel and exposure to the public via airborne exposure.

Railroads

Although railroad shipment accidents are of concern, accidents involving train derailments and content exposure are rare in Orange County. Sources of radioactivity (small or large sources) are rarely carried by train.

4) Radioactive Materials Management

The Radioactive Materials Management Program was initiated in November 1963 when the Board of Supervisors approved the first annual contract between the County and the State for local enforcement of the laws and regulations of radioactive materials. It was felt that the local enforcement would provide better service to radioactive material users, mainly the medical community and a higher level of protection to the County's citizens.

The purpose of the Radioactive Materials Program is to protect public health and the environment from potential sources of

contamination and exposure from radioactive materials. The objectives of the program are accomplished through assuring compliance with all State radiation control regulations by licensed and registered users of radioactive materials and machines; assuring immediate correction of all conditions causing accidental radiation; and monitoring and continuing surveillance of the Orange County environment for possible excessive radiation levels.

e. Nuclear Materials (San Onofre Nuclear Generating Station-SONGS)

1) Description

Naturally occurring radiation is in the air we breathe, the food we eat, in our homes, and even in our bodies. This "natural background" radiation is the largest contributor to a person's average radiation dose. Radiation can affect the body cells and, in excessive amounts, can be injurious. The nuclear power industry contributes less than 1% of the radiation to which we are regularly exposed and yet is the one source that generates the greatest concern among the general public.

The primary difference between nuclear power plants and other power plants is that the fissioning of uranium provides the heat required to generate steam to drive the turbine generator, whereas combustion of fuel oil and natural gas provide the heat source for fossil-fueled power plants. During the process of releasing heat from uranium, fission by-products are formed. Most of these fission by-products are radioactive and emit extra energy in the form of radiation.

2) Sources/Location

a) Sources

Radioactive by-products are contained within the plant, except for small quantities of radioactive gases released into the air and liquids released into the ocean. Such releases occur continuously and are monitored by the plant personnel in accordance with strict government standards. The releases are controlled to ensure a person's added radiation exposure due to material released to the environment is considerably less than the typical exposure from natural background radiation.

The two most likely sources of radiation contamination from SONGS are transportation accidents involving shipments of nuclear materials, and uncontrolled airborne releases from the plant site.

Nuclear Materials/Wastes at SONGS

- Low-level wastes: The largest volumes of such wastes are disposable protective clothing (e.g. towels, gloves, shoe covers), tools and containers that have

been used by radiation workers inside the plant and which usually exhibit very little radioactivity. Also included are demineralizing and filtering materials used to purify water in the reactor coolant systems. These wastes contain very small to moderate amounts of radioactive materials.

- o High-level wastes: These wastes generally consist of highly concentrated radioactive fission and activation products created during nuclear fission in a reactor. Generally, this consists of used nuclear fuel elements. Such wastes will eventually require long term isolation from the environment and, until the Federal Government is ready to accept them for permanent disposal, they will be held at the plant site.

- o New fuel elements: New fuel elements are the source material used in a nuclear fission reactor. They are not highly radioactive and do not present a serious radiation hazard. However, they must be shipped in accordance with strict federal standards.

b) Location

The San Onofre Nuclear Generating Station (SONGS), located next to San Onofre State Beach, is on the Camp Pendleton U.S. Marine Corps Base in San Diego County. SONGS is approximately five miles south of the City of San Clemente. SONGS Unit 1 began commercial operation in January 1968 and has a net generating capacity of 456 megawatts. Units Two and Three went into commercial operation in August 1983 and April 1984, respectively. Each has a generating capacity of 1,127 megawatts. All three units employ pressurized water reactor technology whereby water, under pressure, is heated by nuclear fission and is piped in a totally enclosed system to a steam generator where heat turns fresh water in a separate, closed system, into steam. The fresh water, never in contact with radioactive materials, is then piped to a turbine generator where its energy spins a turbine to generate electricity.

Used fuel assemblies at SONGS are stored in carefully constructed, water-filled pools until they can be shipped to federally-licensed centers for permanent disposal. During this lengthy storage process, the radioactivity diminishes considerably.

3) Transportation/Routes

a) Transportation

- o Low-level waste: Such wastes from SONGS are routinely transported by truck to licensed nuclear waste disposal facilities in Richland, Washington; Beatty, Nevada; or possibly Barnwell, South Carolina. These wastes are then buried in trenches to isolate them from the environment.

They are transported in 55-gallon drums, metal boxes or cans aboard vehicles used only for transporting low-level radioactive wastes. These shipments must meet strict United States Department of Transportation Standards, as well as applicable California codes. By state and federal requirements, liquid waste cannot be shipped. If a waste is more than one percent liquid, it must be processed to either remove the liquid or solidify it.

- o High-level waste: Although high-level nuclear waste from SONGS is currently stored on-site in deep water pools for eventual shipment to federally-licensed disposal sites, current procedures for transporting highly radioactive wastes are considered more than adequate by federal authorities to protect against leaks, even under extreme conditions.

b) Routes

- o Highways: Currently, federal regulations allow the interstate highway system to be used for the transportation of any radioactive wastes, including high-level wastes. For high-level shipments, states are given the authority to identify and select alternate routes that are at least as safe as interstate routes.

  In California, despite a series of hearings dating back to 1982, regulations concerning alternate routes as proposed by the California Highway Patrol have not as yet been adopted.

- o Railroads: Railroad shipment accidents are of concern, although train derailments and content exposure are rare in Orange County. Railroad shipment casks for spent nuclear fuel from SONGS must meet the same criteria as truck shipment casks. It should be noted the federal government will not be accepting shipments of spent nuclear fuel until at least 1998 and, therefore, on-site storage is expected to be utilized until that time.

4) Nuclear Materials Management (SONGS)

a) Regulation/Agencies

- o U. S. Nuclear Regulatory Commission (NRC): Before nuclear power plants are allowed to operate, their owners must demonstrate to the NRC, an independent federal agency, that construction and operation of their nuclear plants will not present an undue risk to public health and safety by meeting the most comprehensive set of standards and regulations of any industrial activity.

There are several permanent NRC inspectors assigned to SONGS. In addition, other NRC inspectors make frequent visits, announced and unannounced, to ensure that safety standards are being met in operating the plants. On an ongoing basis, the NRC is the primary regulator of an operating nuclear power plant.

- o U.S. Federal Emergency Management Agency (FEMA): The administration of the regulations, commonly referred to as NUREG 0654/FEMA-REP1, is the primary responsibility of the Federal Emergency Management Agency. Coupled with the regulation of on-site operations, these regulations are directed to the off-site protection of public health and safety, in the event of an accident, through extensive coordinated plans of the several primary local response agencies.

- o California Office of Emergency Services (OES): The OES is dedicated to coordinating State resources in the event of an accident and is primarily responsible for monitoring at SONGS or any other nuclear power generating station. The OES is also responsible for recovery activities within a 50-mile zone surrounding SONGS, known as the Ingestion Pathway Zone (IPZ). Radiation sources, if released in uncontrolled quantities within the IPZ, could enter and contaminate the food chain.

- o Interjurisdictional Planning Committee (IPC): While the local governments and agencies surrounding SONGS do not have authority to regulate plant operations, they have responsibilities for protecting the public health and safety of their constituents and, accordingly, are intimately involved in emergency planning and response activities. The primary response agencies include Orange and San Diego Counties, the cities of San Juan Capistrano and San Clemente, Marine Corps Base Camp Pendleton, and the local office of the State Parks and Recreation Department. In 1983, these agencies established the Interjurisdictional Planning Committee (IPC) which meets regularly to coordinate their emergency plans, train, exercise, and resolve matters of mutual concern.

b) Programs

(1) Emergency Zones Response Program

In an effort to prepare those who live and work in areas outside, but adjacent to SONGS, the federal and state governments have established three levels of emergency zones. Although it is very unlikely an emergency might arise, these zones are devised to maximize protection of public health and well-being; communicate the levels of emergency; and, outline steps the public can take to

avoid or greatly reduce the potential effects of a radioactive material release.

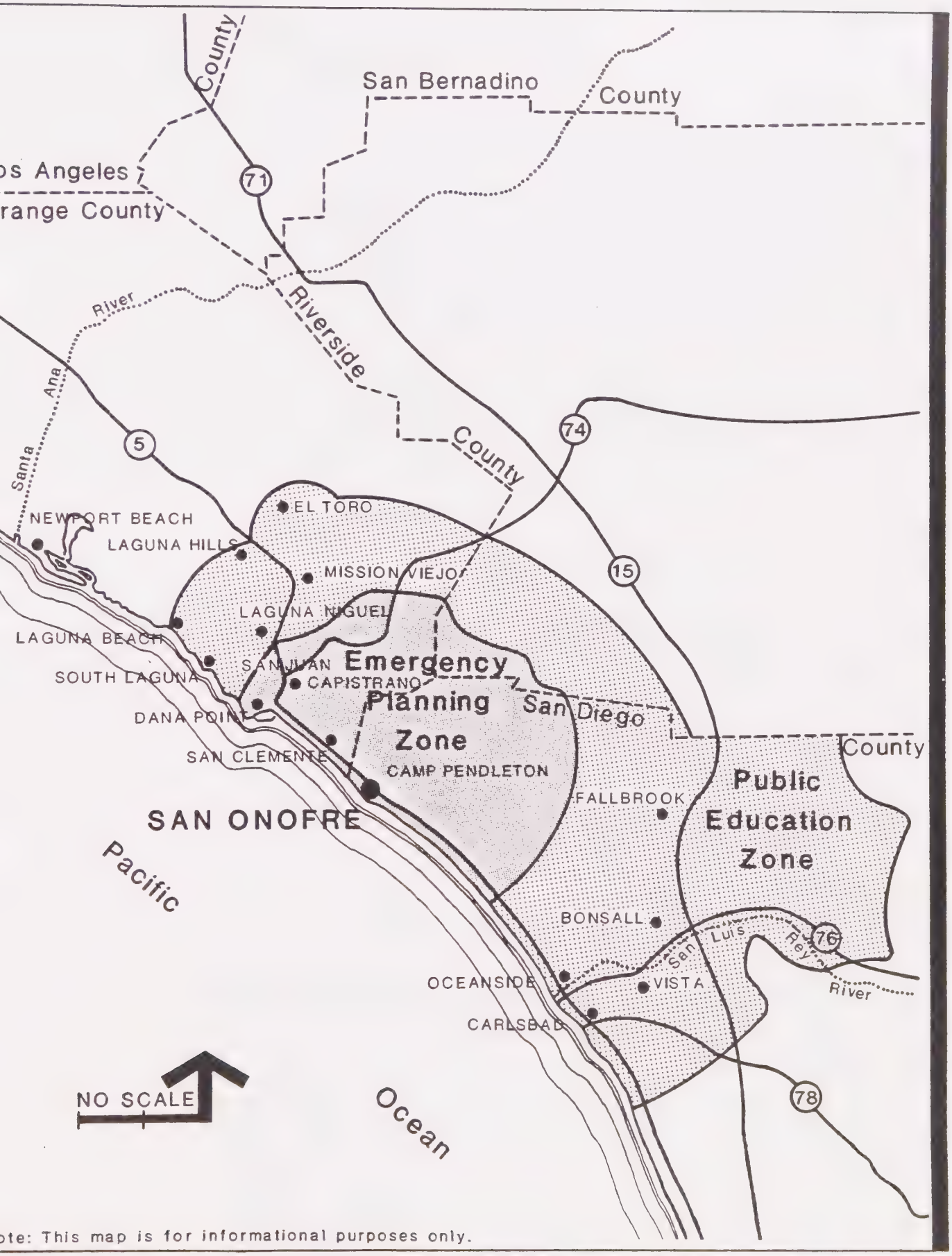
- Emergency Planning Zone: The U.S. Nuclear Regulatory Commission has established an area surrounding every nuclear generating station identified as an Emergency Planning Zone (EPZ). (See Map 2-12). At SONGS, the EPZ encompasses portions of Orange and San Diego counties, the cities and communities of San Clemente, San Juan Capistrano and Dana Point, portions of the Camp Pendleton Marine Corps Base, and several beaches and parks operated by the State Department of Parks and Recreation (i.e. San Onofre State Beach, San Clemente State Beach and Doheny State Beach). While a serious emergency situation at SONGS is considered highly unlikely, extensive planning efforts within the EPZ provide for emergency protective actions such as sheltering or, in very extreme emergencies, evacuation.

  Public information brochures are distributed periodically to every resident and business owner within the EPZ. Included is information on radiological emergencies, protective action procedures, location of transportation assembly areas, evacuation routes, designated reception centers, and Emergency Broadcast stations.

- Public Education Zone (PEZ): The State of California has defined an area outside and adjacent to the federal EPZ as the Public Education Zone. At SONGS, the PEZ encompasses the communities of Laguna Beach, Laguna Hills, Laguna Niguel, South Laguna, El Toro and Mission Viejo in Orange County; portions of the Cleveland National Forest in Riverside, Orange and San Diego counties; and additional portions of the Camp Pendleton Marine Corps Base and the communities of Oceanside, Fallbrook, Bonsall, Carlsbad and Vista in San Diego County. (See Map 2-12).

- Ingestion Pathway Zone (IPZ): The Federal Government has established an area with a 50-mile radius around every nuclear generating station as an Ingestion Pathway Zone (IPZ). At SONGS, the IPZ encompasses all of Orange County and parts of San Diego, Los Angeles, San Bernardino and Riverside counties.

  This zone is established for the purpose of monitoring and decision-making specifically to avoid the ingestion of deposited radioactive materials by humans and livestock. The State of California, Department of Health Services, has the primary



ote: This map is for informational purposes only.

E.P.Z.& P.E.Z. FOR SAN ONOFRE NUCLEAR GENERATING STATION	source: SOUTHERN CALIFORNIA EDISON	map 2-12

responsibility for operations in the Recovery Phase of a nuclear power plant accident and is assisted by the Health Department from each of the affected counties.

f. Summary

Local hazardous waste management planning has been increasing in recent years. In an effort to increase local awareness of hazardous waste management problems, the Tanner Bill will provide the funds for and require all counties in California to prepare a County Hazardous Waste Management Plan to serve as the primary planning document for hazardous waste management in the county.

State and local efforts in hazardous waste management will continue to lay foundations for development of comprehensive legislation and implementation programs. The Tanner process will serve to direct these efforts toward reduction of interagency redundancy; eventual creation of compatible State and local data; development of long-range, focused plans; and development of technologies aiding in waste treatment and source reduction.

Information made readily available and accessible on comprehensive hazardous materials management issues can help citizens come to understand the importance of providing for the safe management of hazardous materials. This interaction can help to ensure that alternative technologies and management policies being implemented represent the highest degree of cooperation and coordination between government agencies, private industries and the public sector.

4. Aircraft Environment

a. Introduction

Aircraft provide a valuable and necessary service to Orange County residents and businesses. Orange County is unique among most counties in California because commercial, general, and military aviation facilities are located within its borders (see Map 2-13). These facilities generate a high level of air traffic which is further influenced by aircraft transiting through the County en route to destinations elsewhere. The sheer number of aircraft operating within the County and the air routes covering the County heightens the chances of aircraft accidents, yet aircraft accidents occur infrequently when compared to the number of air operations.

This section of the Safety Element explores the aircraft environment of Orange County. To do so, it focuses on commercial, general and military aviation operations either by fixed-wing aircraft or helicopters. The section does not discuss aircraft noise. Information pertaining to aircraft noise may be found in the Noise Element of the General Plan.

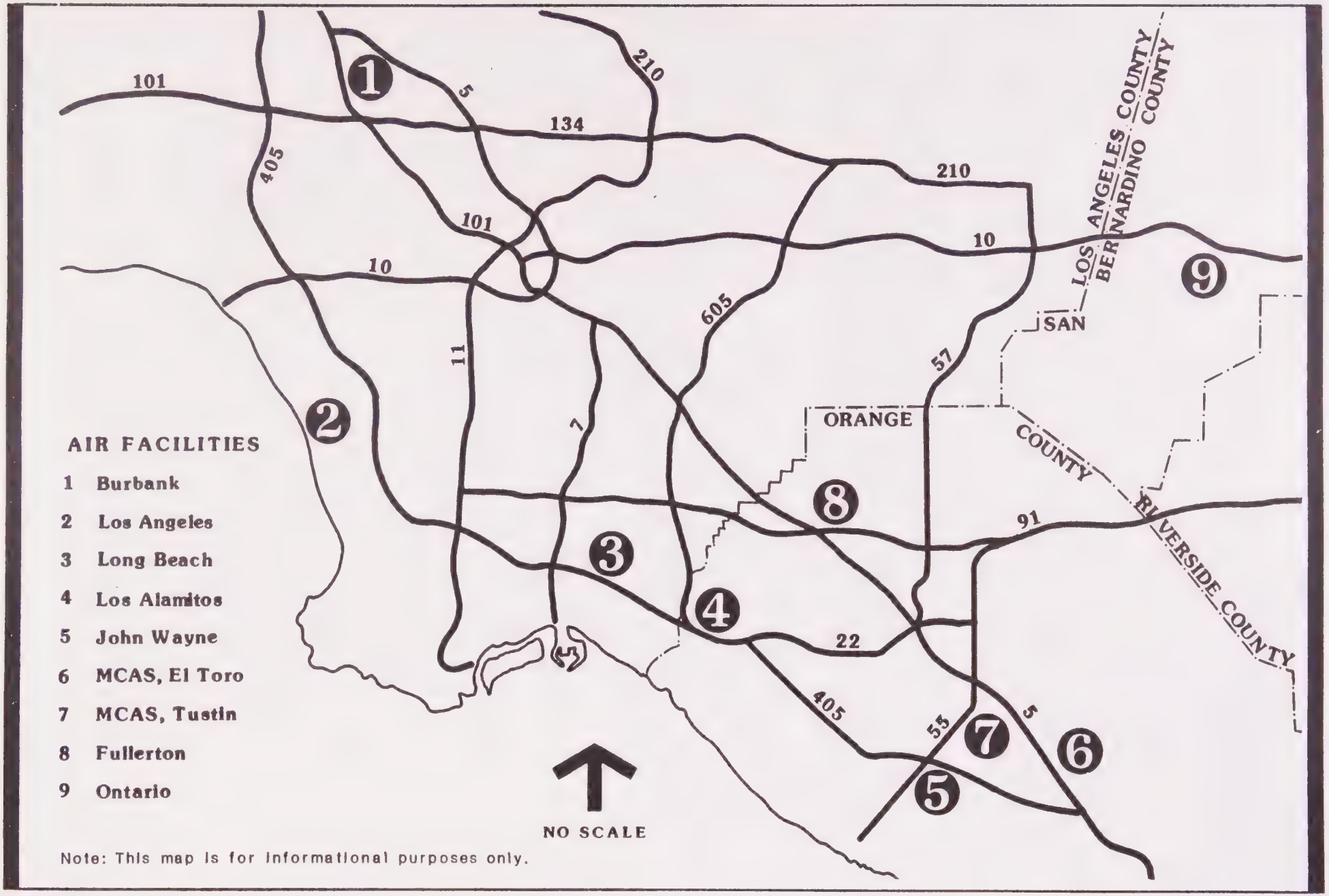
b. Existing Conditions

1) Commercial Aviation

- John Wayne Airport (JWA) is the only commercial service airport in Orange County. It is served by nine commercial air carriers and five commuter airlines. In 1986, 4 million passengers used the airport. It is estimated that the current level of demand for service exceeds 7.0 million persons; however, the Airline Access Plan limits the maximum number of passengers through John Wayne Airport. Those passengers not served at John Wayne obtain air service from airports outside the County. Estimates for the year 2000 indicate that almost 20.0 million total passengers will be generated by the population of the County; however, 8.4 million annual passengers is the maximum number of passengers. From January 1986 to December 1986, over 550,000 airplanes -large and small - landed at or left John Wayne; this is an average of 1,500 planes a day.

- Los Angeles International Airport (LAX) is a regional air transportation facility covering over 1,500 acres of west Los Angeles. There are currently over 500,000 flight operations a year at the airport; total average daily passenger traffic is over 81,000 people. The cities and communities surrounding LAX are largely built-out and consist primarily of residential land uses. The land uses immediately surrounding the airport consist primarily of commercial and industrial uses.

- Ontario International Airport is a regional air transportation facility covering over 1,100 acres of the City of Ontario. There are currently 110,000 flight



MAJOR REGIONAL AIR INSTALLATIONS

SOURCE: SCAG Airport Impact Study (AIMMS) December, 1986

map 2-13

operations a year at the airport; total average daily passenger traffic is over 7,000 people. At present, the areas to the west and north of the airport are largely built-out or approved for development, where the areas to the east and south are largely undeveloped.

- o Long Beach Airport is a sub-regional air transportation facility operated by the City of Long Beach. The airport covers approximately 1,100 acres north of the San Diego Freeway. There are approximately 1,500 passengers daily with an average of 18 daily commercial aircraft departures.

- o Burbank-Glendale-Pasadena Airport is a regional airport located south of the Verdugo Mountain range. There are currently over 37,000 annual flight operations with an estimated projection of over 50,000 by the year 2000. Total average daily passenger traffic is currently over 8,000 people. The fleet mix at Burbank Airport includes the following: B-737s; DC-9s; MD-80s; and B-727s. Anticipated is the conversion of the noisier B-727, B-737 and DC-9 to the quieter departing B-737-300, B-757 and BAe-146.

2) General Aviation

John Wayne Airport serves as the home base for approximately 1,000 personal and business ("general aviation") aircraft. During calendar year 1986 there were approximately 5,000 business jet departures. Within Orange County there are more than 2,600 aircraft registered to personal and corporate owners; yet, there are only two other airports for these types of aircraft within the County besides JWA--Fullerton Municipal, with 590 based aircraft, and the privately owned Meadowlark Airport in Huntington Beach with approximately 300 aircraft. All other private aircraft flying to or through Orange County are home based at airports outside Orange County.

The use of helicopters in business and pleasure has grown enormously in the last decade. With no room to expand, urban airports have had to fit helicopter takeoff and landing areas next to busy airliner runways, taxiways and fueling ramps. Though helicopter pilots and airline pilots are under the guidance of air traffic controllers, they are, depending on the airport, generally communicating on separate radio frequencies.

In Southern California, where an estimated 167,000 helicopter flights occur each year, finding locations for new heliports is a growing concern. There are already 203 heliports within the region, including a growing number in Orange County, most of which are privately owned and operated. About 30 helicopters are based at JWA.

3) Military Aviation

a) MCAS El Toro

Marine Corps Air Station (MCAS) El Toro is one of two active Marine Corps master jet air stations in the U.S. and the only one located on the west coast. The installation is located in south central Orange County, 10 miles east of the City of Santa Ana and eight miles north of the Pacific Ocean.

MCAS El Toro serves as a tactical base for the following types of high performance jet aircraft; F-4 Phantom; F/A-18 Hornet, A-4 Skyhawk, A-6 Intruder. The installation also bases KC-130 Hercules aircraft. These four-engine turboprop aircraft are used primarily for aerial refueling of fighter, attack and helicopter aircraft. Other aircraft assigned to the base include T-39 and C-12 fixed wing aircraft and UH-1N helicopters.

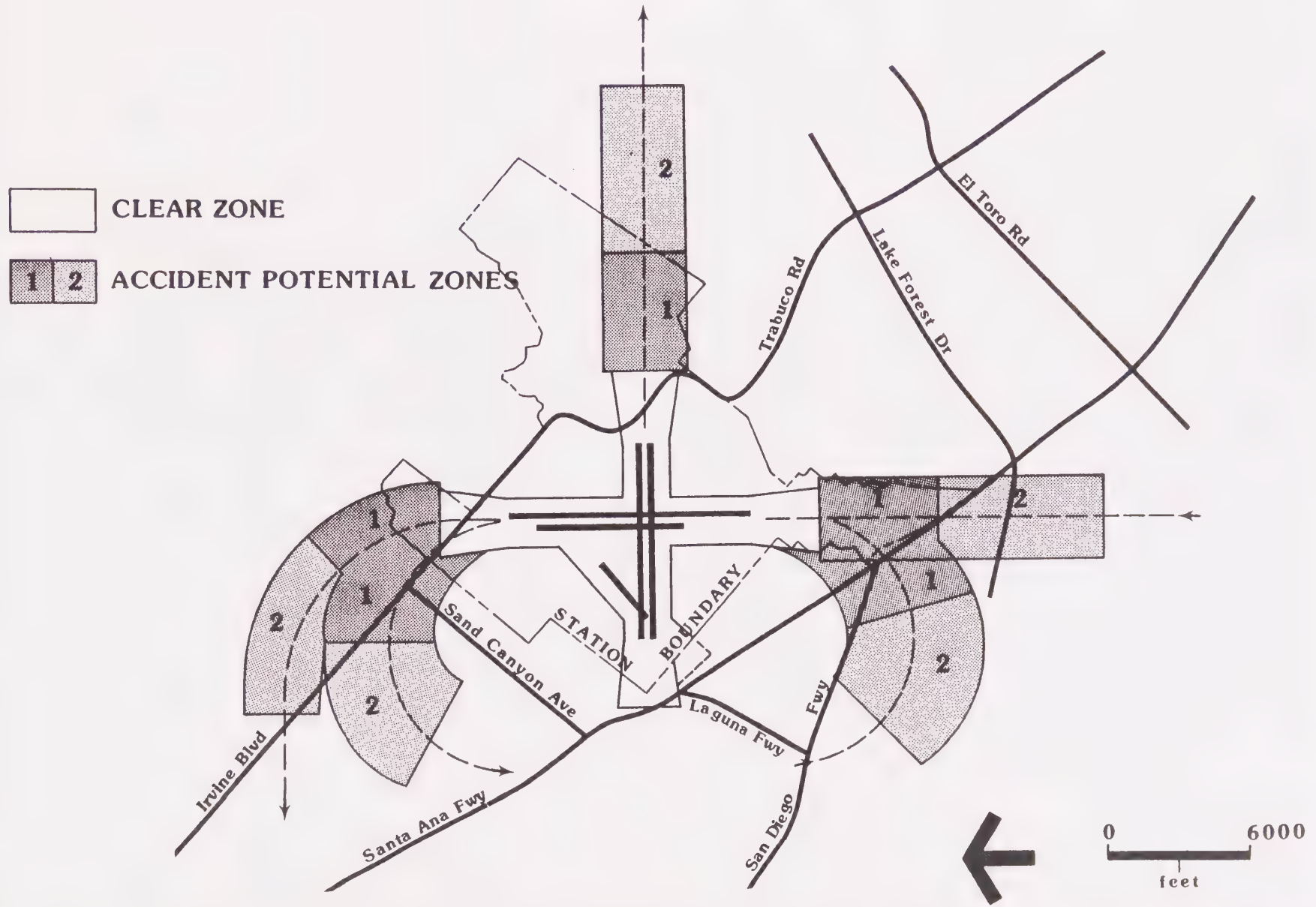
The airspace surrounding MCAS El Toro is highly utilized and consequently very congested. Several factors contribute to this congestion. According to the Air Installation Compatible Use Zone (AICUZ) study prepared for MCAS El Toro (PRC Speas Associates, 1981), annual jet operations average 72,000. Approximately 50,000 additional operations per year are generated by helicopter, propeller and general aviation aircraft.

Aircraft currently using MCAS El Toro operate in a very restricted environment for noise abatement purposes. During normal conditions (wind permitting) approaches are made to Runway 34R, and departures are made from Runway 7. Aircraft operating on Runways 16 and 25 would have more favorable winds, but would also have a greater noise impact on surrounding residential areas.

According to the Southern California Aviation Study Technical Report issued by SCAG in July 1980 and later revised in the Supplement Technical Report of June 1982, the El Toro landing approach to the north on Runway 34 does not conflict with other airport flight paths. It does cross the busy V23 airway near the coastline, but transiting aircraft are assigned to altitudes above the El Toro approach. The El Toro missed approach for Runway 34 has been designed to avoid conflict with instrument approaches to MCAS Tustin and JWA.

The 1981 Air Installation Compatible Use Zone (AICUZ) study defined and identified accident potential zones in the vicinity of MCAS El Toro. These are based on specific accident data for El Toro as well as guidelines developed during a tri-service study effort. Nearly all accident potential zones are contained within the 65 dB Community Noise Equivalent Level (CNEL) noise contours. Map 2-14 depicts the current accident potential zones for MCAS, El Toro.

Note: This map is for informational purposes only.



AIRPORT SAFETY AREAS: MCAS, EL TORO

SOURCE: Western Division, Naval Facilities Engineering Command March, 1981

map 2-14

Located at MCAS, El Toro is the FAA's Coast Terminal Radar Control (TRACON) with jurisdictional control for the airspace between San Diego and Los Angeles. TRACON is forecast to have military and civilian instrument flight rule (IFR) traffic volumes greater than IFR control capacity in the 1990s. While the TRACON would not exceed capacity in practice, the large traffic volumes suggest extensive aircraft delays, especially during peak periods and poor weather.

MCAS, El Toro is the Marines' major tactical jet air base on the West Coast. Its aircraft, therefore, must be able to become airborne as soon as possible in a national emergency, as well as during practices for such emergencies. Military aircraft using MCAS, El Toro often carry live ordnance. A greater potential for ground damage exists for these aircraft than for aircraft not carrying any ordnance.

b) MCAS Tustin

Marine Corps Air Station, Tustin is located in close proximity to John Wayne Airport. From this installation, the Marines operate a variety of medium and heavy-lift helicopters. Among them are the twin-rotored CH-46 Sea Knight, CH-53 Sea Stallion and CH-53E Super Sea Stallion. In 1986, Tustin generated 124,000 air operations, of which only 20 percent departed the local (on-base) traffic pattern.

c) Los Alamitos Armed Forces Reserve Center

Los Alamitos Armed Forces Reserve Center (AFRC), twelve miles from JWA, is located in central Orange County within the City of Los Alamitos. On-site facilities presently include two runways and associated taxiways, ramp space, and hangars. The AFRC is primarily used for helicopter training missions. There are approximately 80,000 yearly flight operations at the facility (SCAG, 1980).

d) MCAS Camp Pendleton

The air station within Marine Corp Base (MCB) Camp Pendleton is located 50 miles southeast of JWA. MCB Camp Pendleton serves as the primary west coast training facility for all elements of Marine Corps and Navy amphibious assault training and support missions. Marine Corps Air Station Camp Pendleton operates light assault aircraft, including the OV-10 Bronco, the AH-1J Cobra and the UH-1N Huey helicopters. Over 120,000 operations were generated by this airfield in 1986.

c. Aircraft Accident Potential

Orange County is located in one of the busiest aviation areas in the world (two of the busiest 10 airports in the United States are

within a 50-mile radius) along with a multitude of transient traffic. Currently, incoming traffic to JWA crosses airspace above Huntington Beach and Newport Beach that is also used by planes preparing to land at Long Beach Municipal Airport. In addition to Long Beach and John Wayne Airports and El Toro Marine Corps Air Station, commercial traffic coming and going from Los Angeles International Airport (LAX) adds to the aerial congestion above Orange County (40 percent of departing LAX passenger jets are routed south over Seal Beach and then east over El Toro or further south to San Diego). However, many of the flights are flying at altitudes in excess of 10,000 feet.

o Air Installations Accident Potential Descriptions

A concern of the general public living in the proximity of an airport or under the aircraft flight paths is the incident of an aircraft accident resulting in ground damage. Airports and air carriers share much this same concern although their motivation is generally to promote positive public sentiment.

The air installations within Orange County maintain records which detail the aviation accidents that have occurred within the air space surrounding the facility. They provide important information to evaluate the relative air safety within Orange County. Below is information describing the accident potentials for the five primary air installations within the County.

1) John Wayne Airport (JWA) - In early 1985 the Board of Supervisors adopted an Airport Master Plan for John Wayne Airport. The plan was the subject of extensive environmental documentation, including an evaluation of aircraft accidents. The environmental document (EIR 508) based on the only accident statistics obtainable from the National Transportation Safety Board for the period of 1972 to 1981 revealed that 54 accidents have occurred during 5.9 million operations (arrivals and departures) or .9 accidents per 100,000 operations.

2) Fullerton Airport - The Airport's Noise and Safety Committee has compiled accident records for the period of 1960 through 1987. The records for this 26 year period reveals 28 accidents. The airport averages approximately 212,000 operations a year with an accident rate of approximately .5 accident per 100,000 operations. In no instance has an accident resulted in the death of anyone on the ground.

3) Marine Corps Air Station, El Toro - Accident records for this facility are maintained in compliance with Department of Defense (DOD) criteria. In accordance with the DOD criteria, there have been 33 accidents involving Marine Corps aircraft within the five-mile airport traffic area since 1964. Nine of the accidents involved helicopters and fifteen of the aircraft accidents were confined to the base. Since the adoption of AICUZ in 1981 the base has conducted approximately 72,000 jet aircraft flight operations and an

additional 50,000 non-jet aircraft operations. Total flight operations for the base since 1964 is approximately 2.9 million. The accident rate for El Toro given the annual operations and number of accidents for this period is approximately .9 accidents per 100,000 operations.

4) Marine Corps Air Station, Tustin - This facility operates exclusively helicopters. Accident records are maintained in accordance with Department of Defense criteria. Since 1964, there have been twelve accidents involving helicopters from this base operating within a five-mile airport traffic area. Six of the accidents have occurred within the boundaries of the base. Since 1964, it is estimated that 3.18 million operations have involved helicopters from the base with an accident rate of approximately .4 accidents per 100,000 operations.

5) Los Alamitos Army Air Field - Accident records maintained by this facility are subject to Department of Defense criteria in the same manner as the records maintained by the two Marine Corps Air Stations. Though minor mishaps causing less than 10,000 dollars in damage to aircraft have occurred on the air field premises, no accidents have occurred which have resulted in loss of life or major ground damage in the last ten years.

d. Aircraft Safety Management

1) Regulations

Through the Federal Aviation Act of 1958, as amended, and numerous Grant-in-aid programs for airport development, the federal government has exercised a strong legal and practical preemption over state and local authority in the areas of airspace use and management, air traffic control, aviation safety, and the regulation of aircraft noise at its source. The federal government also controls interstate and foreign air commerce.

State and local governments which are not airport proprietors are largely limited to protecting their citizens through land use controls, or other police powers which do not affect aircraft operations directly or indirectly.

The airport proprietor has, with certain limitations, the right to determine the type of service his airport will provide as well as the type of aircraft to utilize his airport facilities. The actual scope of proprietor authority over airport and aircraft operations has been the subject of substantial litigation in recent years, yet, the scope of the proprietor's authority remains imprecisely defined. The dividing lines between federal, state and local government, and airport proprietor responsibilities and authority, are not clear and are subject to different interpretations.

Certain standards are specified in Part 77 of the Federal Aviation Regulations to define airspace around an airport that should be free of obstructions to air navigation. Ideally no obstructions should penetrate these "imaginary surfaces" surrounding the airport as defined in Part 77.

2) Programs

Air Traffic Control Areas and Designated Authorities

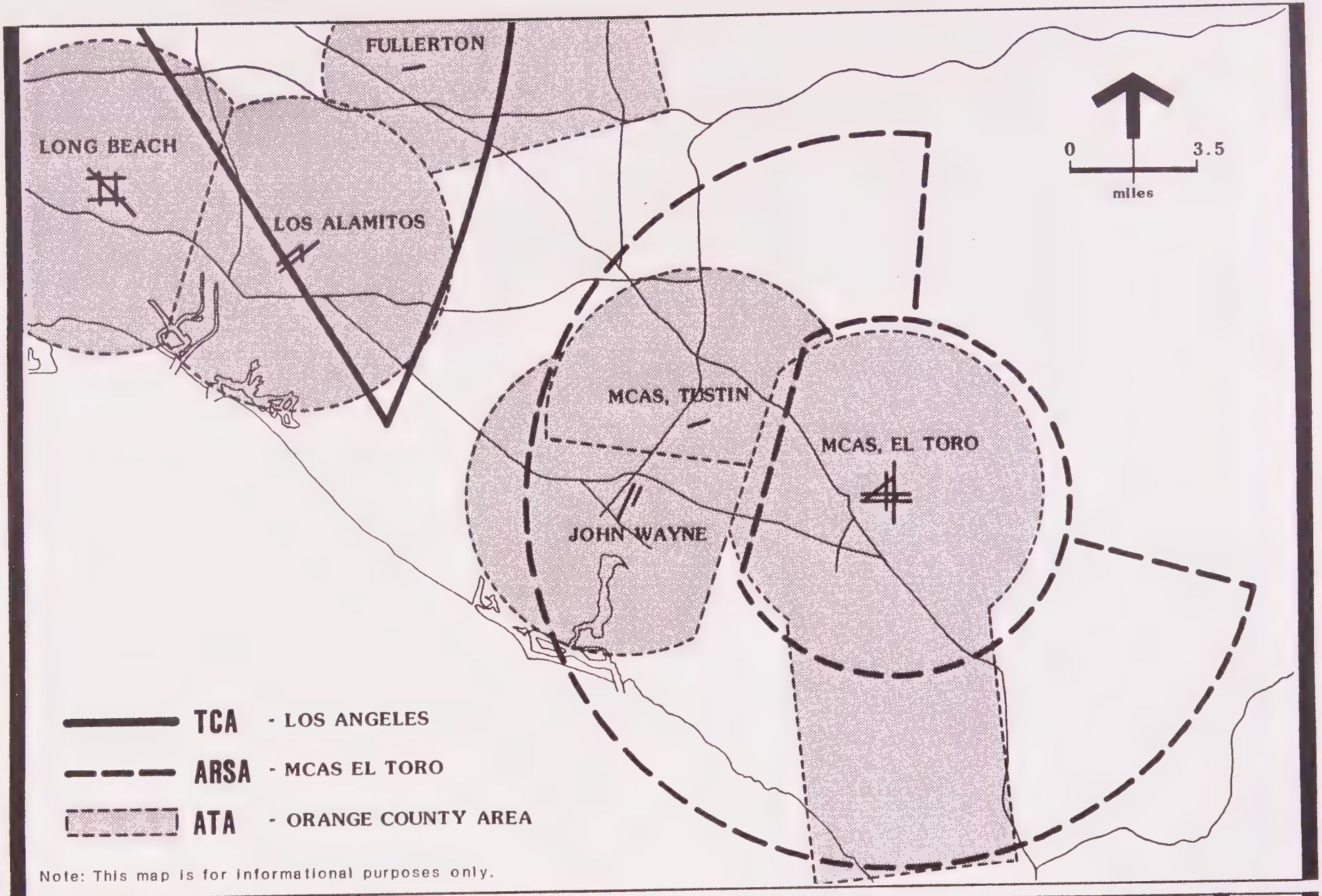
Orange County is crisscrossed by a complex system of air traffic corridors and landing and take-off patterns. Much of Orange County commercial air traffic flies across complex air spaces controlled by various Federal Aviation Administration facilities. These facilities include the following: Los Angeles Terminal Radar Approach Control (LA TRACON) Center; Los Angeles Air Route Traffic Control Center (LA Center) at Palmdale; and the Coast Terminal Radar Approach Control (Coast TRACON) located at MCAS, El Toro.

LA TRACON daily handles the approach and departure routes for more than 1,700 flights arriving and departing from Los Angeles International (LAX). The Los Angeles Air Route Traffic Control Center at Palmdale controls as many as 300 aircraft at a time in an oblong 180,000-square-mile rectangle of airspace covering southwest Utah, southern Nevada, western Arizona, Southern California and a stretch of the Pacific Ocean reaching 200 miles out to sea. Coast TRACON covers a 3,000-square-mile area including most of Orange County. TRACONS utilize computer-enhanced radar images to guide pilots through the Los Angeles-Orange County basin until airport tower controllers take over during final approach.

These facilities guide thousands of planes through various types of airspace above Orange County. Among these types of airspace are the following: Terminal Control Areas (TCAs), Airport Radar Service Areas (ARSAs), and Airport Traffic Areas (ATAs). (See Map 2-15)

The Los Angeles TCA is 52 miles long, 24 miles wide and is separated into 12 zones. A pilot may not enter any part of the TCA unless he first receives a clearance from air traffic controllers. A pilot must also possess a two-way radio, VOR (very high frequency omnidirectional radio) receiver, a transponder and an encoding altimeter.

An Airport Radar Service Area (ARSA) consists of controlled airspace extending upward from the surface or higher elevation to specified altitudes, within which all aircraft are subject to the operating rules and pilot and equipment requirement specified by Federal Aviation Regulations (FAR Part 91). An ARSA exists in Orange County for the airspace surrounding MCAS El Toro.



ORANGE COUNTY AIR TRAFFIC CONTROL AREAS

SOURCE: US Dept. of Commerce, NOAA July, 1986

map 2-15

Airport Traffic Areas (ATAs) consist of the airspace within a horizontal radius of 5 statute miles from the geographical center of any airport with an operating control tower extending from the surface up to, but not including, an altitude of 3,000 feet above the elevation of the airport.

e. Summary

As described in this section, the airways above Orange County are heavily travelled by aircraft originating or arriving in Orange County or transmitting through the County to other destinations. Despite the heavy travel, aircraft accidents occur infrequently due in part to Orange County's status as a "positive control area" created by the network of air traffic control areas. Aircraft flying within Orange County are routinely in contact with air traffic controllers.

In the future, the Federal Aviation Administration plans to study an expanded terminal control area for the region as a possible means of streamlining and improving the control of air traffic. The FAA is also evaluating revised air routes in southern California to minimize the number of commercial aircraft flying above heavily populated areas. In the future, there may be new FAA requirements that aircraft be equipped with improved transponders which enhance identification and recognition thereby reducing accident potentials.

D. Inventory of Existing and Potential Natural Hazards

Natural hazards present in Orange County are due in part to the County's geography, geology and climate; and, may be exacerbated by the urbanization process that diverts watercourses, covers alluvial soils, builds adjacent to potentially unstable slopes and near possible fault traces. The natural hazards section focuses upon the two most significant natural hazards; floods and seismic/geologic hazards.

1. Flood Hazards

a. Introduction

Orange County's geography and climate increases its susceptibility to flooding. Commonly, where a broad alluvial plain exists such as the one created by the Santa Ana River there has been and is a continual expansion of urban development. The change from agriculture to urban development increases the amount of impermeable surfaces and raises flood potential. Whenever ground surfaces are covered by pavement or other impermeable surfaces, direct absorption of precipitation by the underlying soil is precluded, and runoff increases and creates a potential threat of flooding. This condition is further aggravated during peak rain periods when absorptive ground becomes saturated, increasing the rate of storm runoff.

The hazard of dam failure is another major flood threat. The threat is primarily one of sudden downstream flooding, which could be disastrous if it occurs when a dam's impoundment volume is near capacity. Disaster potential is high since flood inundation could occur with minimal warning.

Another type of flooding occurs from the blockage of a flowing stream by a landslide. A natural dam may be created by the landslide temporarily impounding water. As a result of erosion, these flood flows are released downstream. Seiching, an earthquake-induced wave within a lake, reservoir or harbor, may cause flooding, though its occurrence in Orange County would be considered rare.

Coastal flood inundation is another hazard. In response to the problems of planning, designing and construction of structures and coastal flood control devices, Orange County undertook a study of Coastal Flood Plain Development. The Study completed in 1985 provides technical criteria and guidelines for the review of structures and coastal protective devices in Orange County. The comprehensive study is intended to supplement zoning, land use, specific plans and Local Coastal Programs, and should be updated at appropriate intervals to remain current in the face of shoreline position changes and sea level fluctuations.

The primary flood effects caused by inundation, erosion and sedimentation are potential loss of life and property damage. There are other, less well-known effects that may be equally threatening and damaging. Among these are disruptions of commerce; disruptions to emergency transportation; pollution of drinking water caused by broken sewage lines; and strains placed upon the emergency services needed to respond to a flood emergency.

b. Orange County Flood History

Periods of sustained or intense precipitation are commonly associated with generating flood conditions. Precipitation within Orange County is generally the result of three distinct storm mechanisms. The most important mechanism is convergence associated with general winter storms. These storms originate as low pressure cells in Southern Alaska. On occasion they move far enough south to carry widespread precipitation across southern California. The second mechanism, also associated with general winter storms, is caused by orographic uplift. Mountain masses (i.e., Santa Ana Mountains) present a natural barrier to moisture laden air masses and deflect them upward increasing condensation and precipitation.

The third mechanism causing intense precipitation is convection. Thunderstorms, which may produce intense rainfall for relatively short duration are caused by the rapid heating and cooling of moisture laden air (i.e., convection).

General winter storms, which cause most of the major floods in the Santa Ana River basin, usually occur between the months of November through April. Flooding within the basin may be the result of one or successive storms of differing duration and intensity which compounds their effects. The heavy rainfall of the second or third storm may create a severe flood condition.

The history of floods in southern California begins in the year 1825. Prior to this date, very little data exists recording flood damage or inundation. Between 1825 and the turn of the century three floods occurring in the years 1825, 1862 and 1891 caused widespread flooding in the southern California region. In this century storm-caused flooding has been reported in Orange County for the years 1903, 1910, 1914, 1916, 1921, 1922, 1927, 1938, 1943, 1965, 1966, 1969, 1976, 1978, 1980, and 1983. Seven of these storms, 1916, 1938, 1969, 1974, 1978, 1980 and 1983, have produced widespread flooding in the County.

Two measurements commonly used to describe floods are flood frequency and flood size. Flood frequency refers to the chance in any given year that a flood of a given size could occur in a given watershed. A 60-year flood, then, is a flood which has a one in 60 chance of occurring in any year in a specific watershed.

There are three measurements for determining flood size: base flood, standard project flood and probable maximum flood. A base flood refers to the flood having a one percent chance of being equaled or exceeded in any year, a.k.a. 100-year flood. A standard project flood is a flood that would result from the most severe combination of meteorological and hydrological conditions considered reasonably characteristic of the geographic area. A probable maximum flood is estimated to be two to two-and-one-half times greater than a standard project flood.

c. Description of Potential County Flood Threats

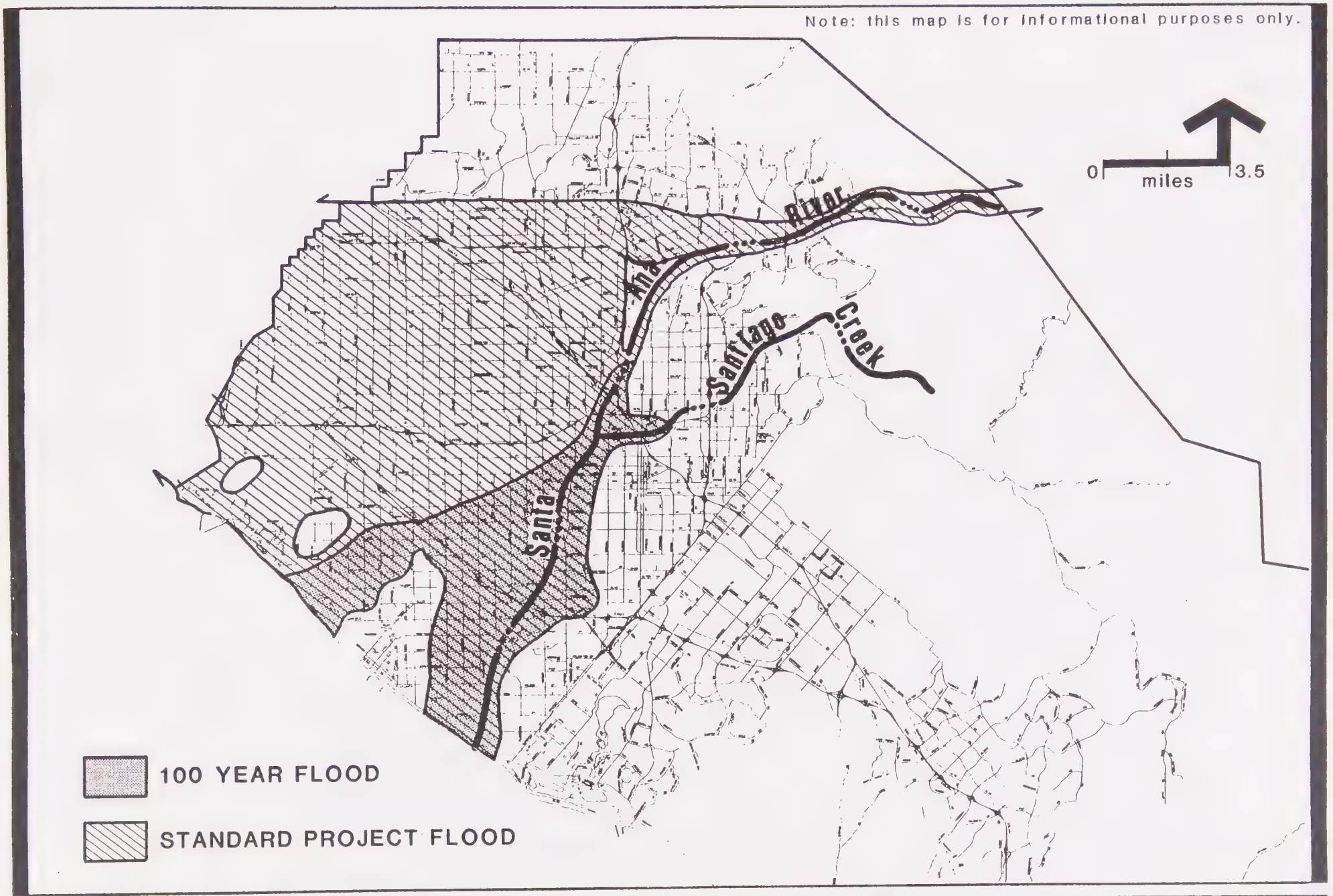
1) Flood Inundation

a) Santa Ana River

The Santa Ana River basin is the largest watershed area in Southern California encompassing approximately 3,200 square miles. The river represents the greatest flood hazard west of the Mississippi River because of the urban development present within its expansive watershed. The watershed area is separated into an upper and lower basin roughly divided by Prado Dam and Reservoir near the City of Corona. The Santa Ana River flows through the principal urban centers of San Bernardino and Riverside counties in the upper basin and most of the major cities of Orange County in the lower basin. Within Orange County, the overflow area for a standard project flood includes the following cities: Costa Mesa; Newport Beach; Santa Ana; Orange; Anaheim; Garden Grove; Fullerton; Buena Park; Cypress; Los Alamitos; Huntington Beach; Surfside; Seal Beach; and, adjacent unincorporated areas (see Map 2-16). According to a 1975 U.S. Corps of Engineers' report on the Santa Ana River Main Stem and Santiago Creek, under the most severe conditions likely, floodwaters would cover over 100,000 acres to an average depth of 3 feet. Some areas would be much deeper (for example, Huntington Beach's low area would be under 6 feet of water). The deepest floodwaters, about 7 feet deep, would occur on land areas near the Pacific Coast Highway where the waters would dam against the beach berm. Such a flood could affect as many as 500,000 homes and 2,000,000 people.

b) Santiago Creek

Santiago Creek (see Map 2-17), a principal tributary of the Santa Ana River, rises on the western slopes of the Santa Ana Mountains and receives intermittent flows from several smaller canyons, including Black Star, Baker, Silverado, Modjeska, and Harding. The creek cuts a course 28 miles long from its headwaters near Santiago Peak to its confluence with the Santa Ana River. It drains a total of 102 square miles. Irvine Lake, also referred to as Santiago Reservoir, is formed behind Santiago Dam. From Santiago Dam, Santiago Creek courses northwestward through Irvine Regional Park to Villa Park Reservoir formed behind Villa Park Dam. It then courses southwestward through the cities of Villa Park, Orange, and Santa Ana. The creek joins the Santa Ana River just below the Garden Grove Freeway near the borders of the cities of Orange, Santa Ana, and Garden Grove. Below Villa Park, the creek flood plain is heavily urbanized; above this point, it remains largely in its natural state.



SANTA ANA RIVER OVERFLOW AREA

source: U.S. ARMY CORPS OF ENGINEERS, JULY 1980

map 2-16

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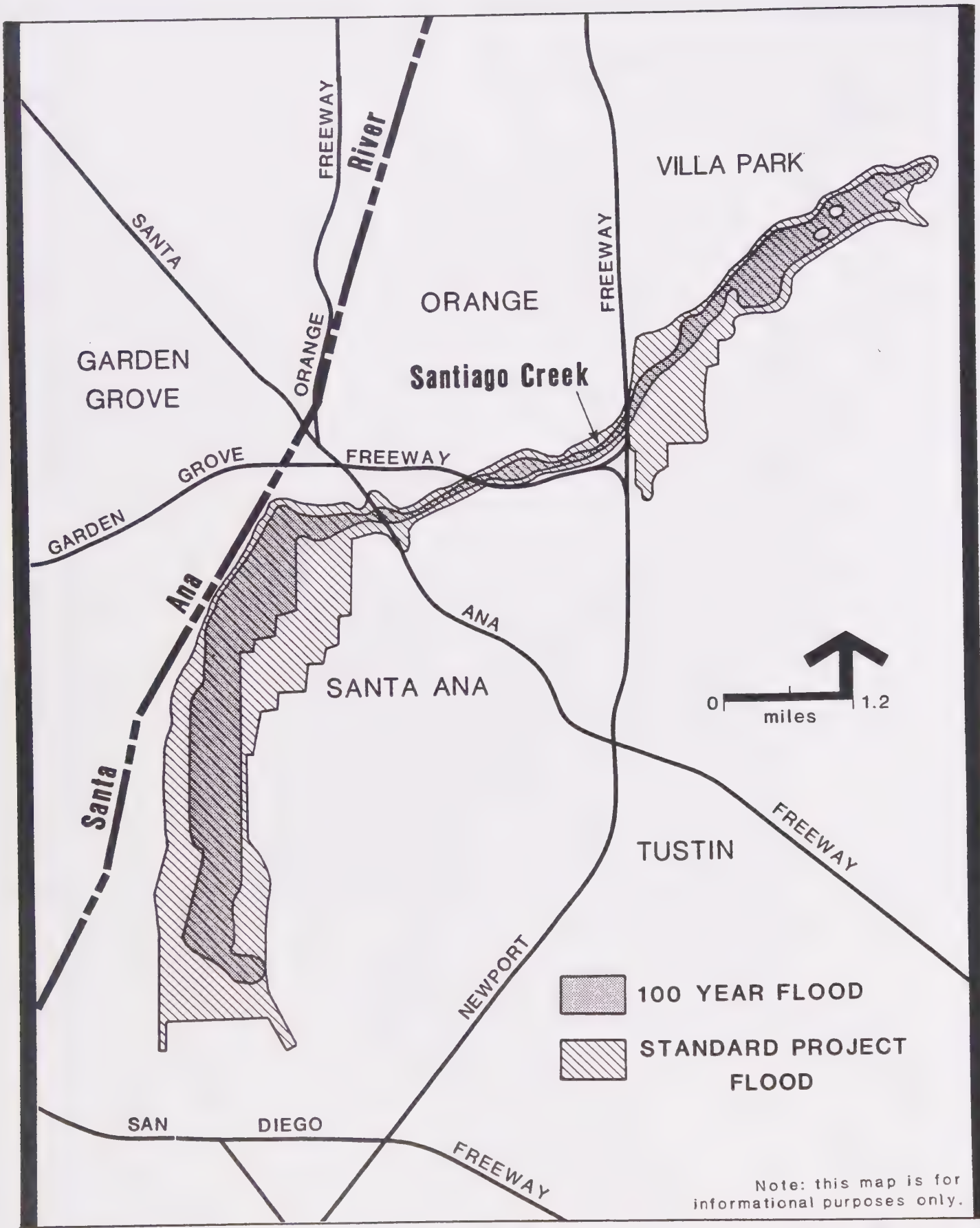


SANTIAGO CREEK OVERFLOW AREA

source: U.S. ARMY CORPS OF ENGINEERS, JULY 1980

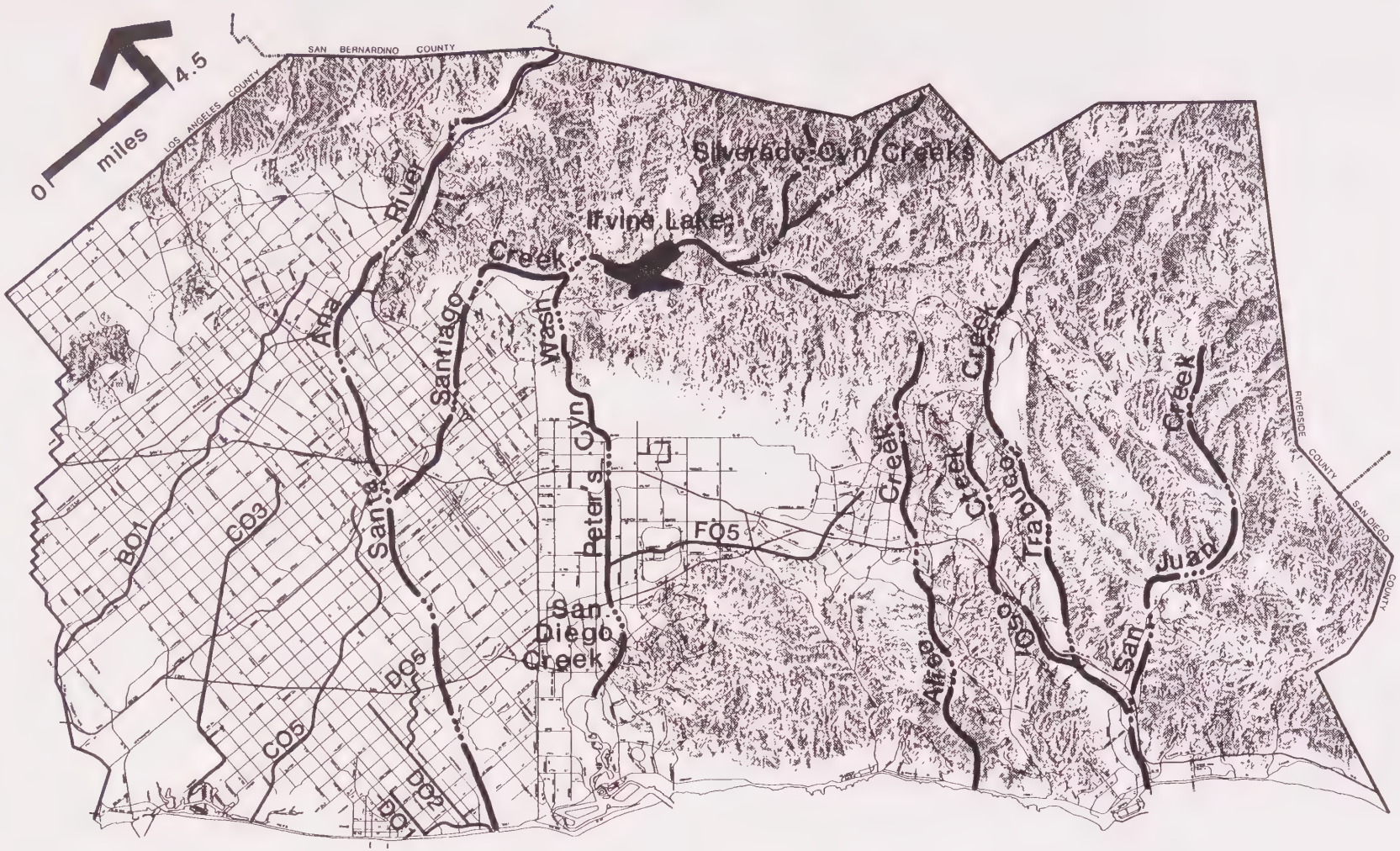
map 2-17

c) Other Orange County Creeks

In addition to the major water courses of the Santa Ana River and Santiago Creek, other streams and creeks possess potential flood problems. These flood potentials are of a more localized nature as opposed to the more extensive hazard presented by the Santa Ana River and Santiago Creek.

In North County perhaps the greatest flood potential exists from the Huntington Beach/Fountain Valley Channels; the East Garden Grove-Wintersburg Channel; Carbon Creek Channel; Anaheim/Barber City Channel; San Diego Creek; and Peter's Canyon Wash (see Map 2-18). Flood control improvements for these facilities were developed in accordance with earlier design criteria intended to meet flood threats expected to occur within a predominately rural agricultural county as it developed upon the broad alluvial fan of the Santa Ana River.

South County is crisscrossed by creeks which are integrated with existing and future development. The most noteworthy creeks are: Aliso Creek, Trabuco Creek, Oso Creek and San Juan Creek (see Map 2-18). The water courses are generally left in their natural condition because these creek channels and other lesser ones are predominantly incised arroyos. As necessary, various flood control facilities to mitigate the flood threat have been constructed in conjunction with urban development.



BO1 Carbon Creek Channel
CO3 Anaheim/Barber City Channel
CO5 East Garden Grove/Wintersburg Channel
DO1 Huntington Beach Channel
DO2 Talbert Channel
DO5 Fountain Valley Channel
FO5 San Diego Creek

Note: This map is for informational purposes only.

MAJOR ORANGE COUNTY WATER COURSES

source: COUNTY OF ORANGE

map 2-18

1) Dam Inundation

a) Prado Dam

Prado dam and reservoir, completed by the Corps of Engineers in 1941, are intended to provide flood protection to the Lower Santa Ana River basin. The earthen dam and its reservoir were designed in the 1930s to control floods of magnitudes that could be reasonably expected to occur under anticipated future development of the watershed (typically a 200-year flood). Since Prado Dam was built, however, changes have occurred in the drainage area. Historical data on rainfall and runoff, coupled with advances in predicting future flood potential, have shown Prado Dam to presently offer only 70-year flood protection. In addition, intensive urbanization within the drainage area has occurred, further complicating this problem. Another serious concern is that the existing Prado Dam and spillway could not accommodate a probable maximum flood, resulting in overtopping of the dam. Map 2-19 depicts the potential flood hazards that might occur from a failure of Prado Dam.

b) Santiago Creek Dam

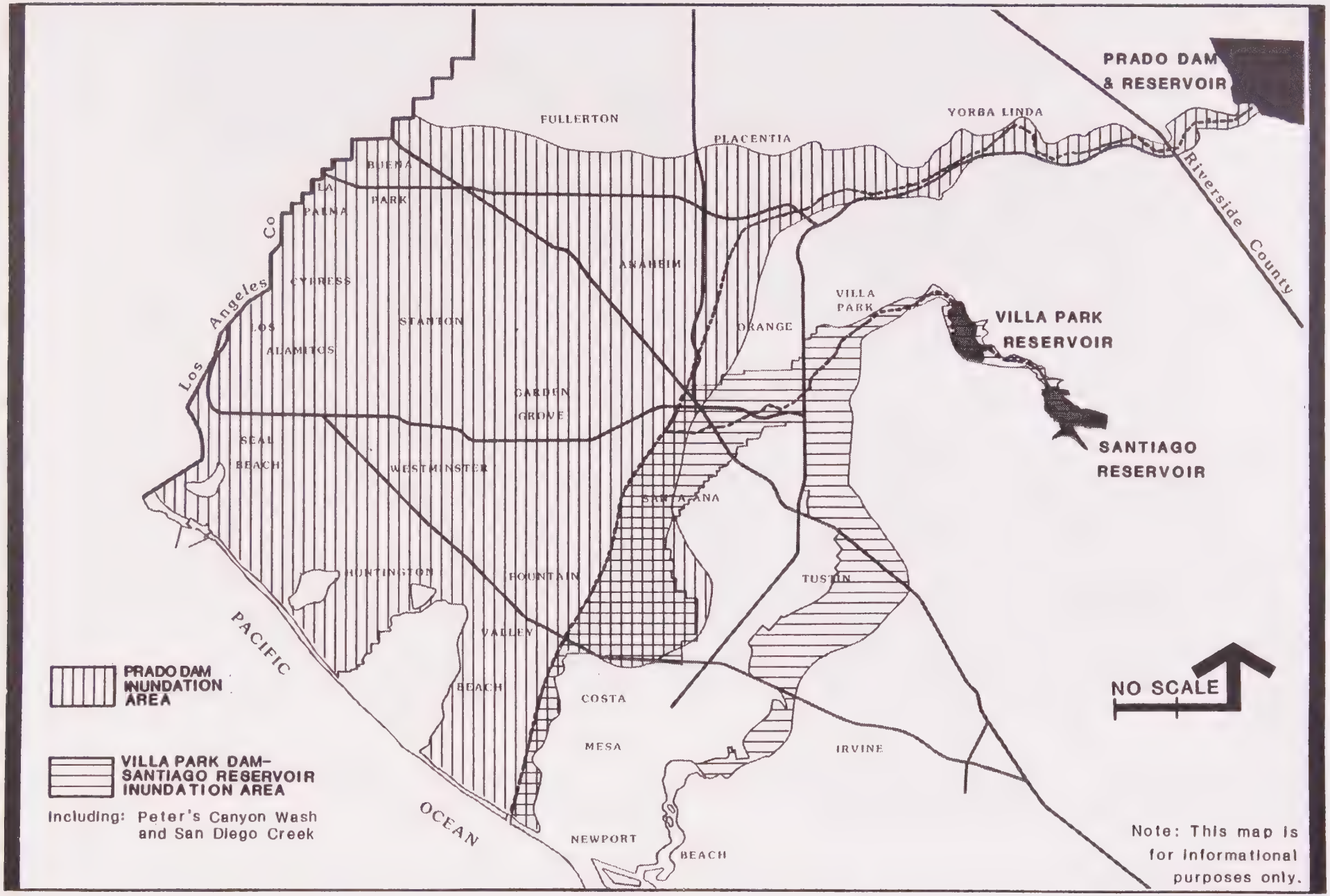
Santiago Creek Dam is an earthen dam which impounds water forming Irvine Lake. The dam provides water conservation as a primary benefit, flood control as a secondary function, and promotes recreational activities within the lake. Flooding would be exacerbated by the failure downstream of Villa Park Dam. Map 2-19 depicts the flood hazard potential that could happen should the dams fail.

c) Villa Park Dam

Villa Park Dam is an earthen dam located downstream from Santiago Creek Dam. This facility is the principle flood protection along Santiago Creek. Failure of this dam would pose a flood hazard impacting the downstream communities of Villa Park, Tustin, Orange, Santa Ana and Irvine.

d) Other Dams

In addition to the flood control protection provided by Prado Dam on the Santa Ana River, and Santiago Creek Dam and Villa Park Dam on Santiago Creek, there are additional dams within Orange County constructed for flood protection purposes. Fullerton Dam, Brea Dam and Carbon Canyon Dam in North County are earthen dams constructed and operated by the Army Corps of Engineers to provide flood protection to urban development along Fullerton Creek, Brea Creek and Carbon Canyon.



PRADO DAM AND SANTIAGO RESERVOIR INUNDATION AREAS

source:
ARMY CORPS OF ENGINEERS

map
2-19

SAF-2-70

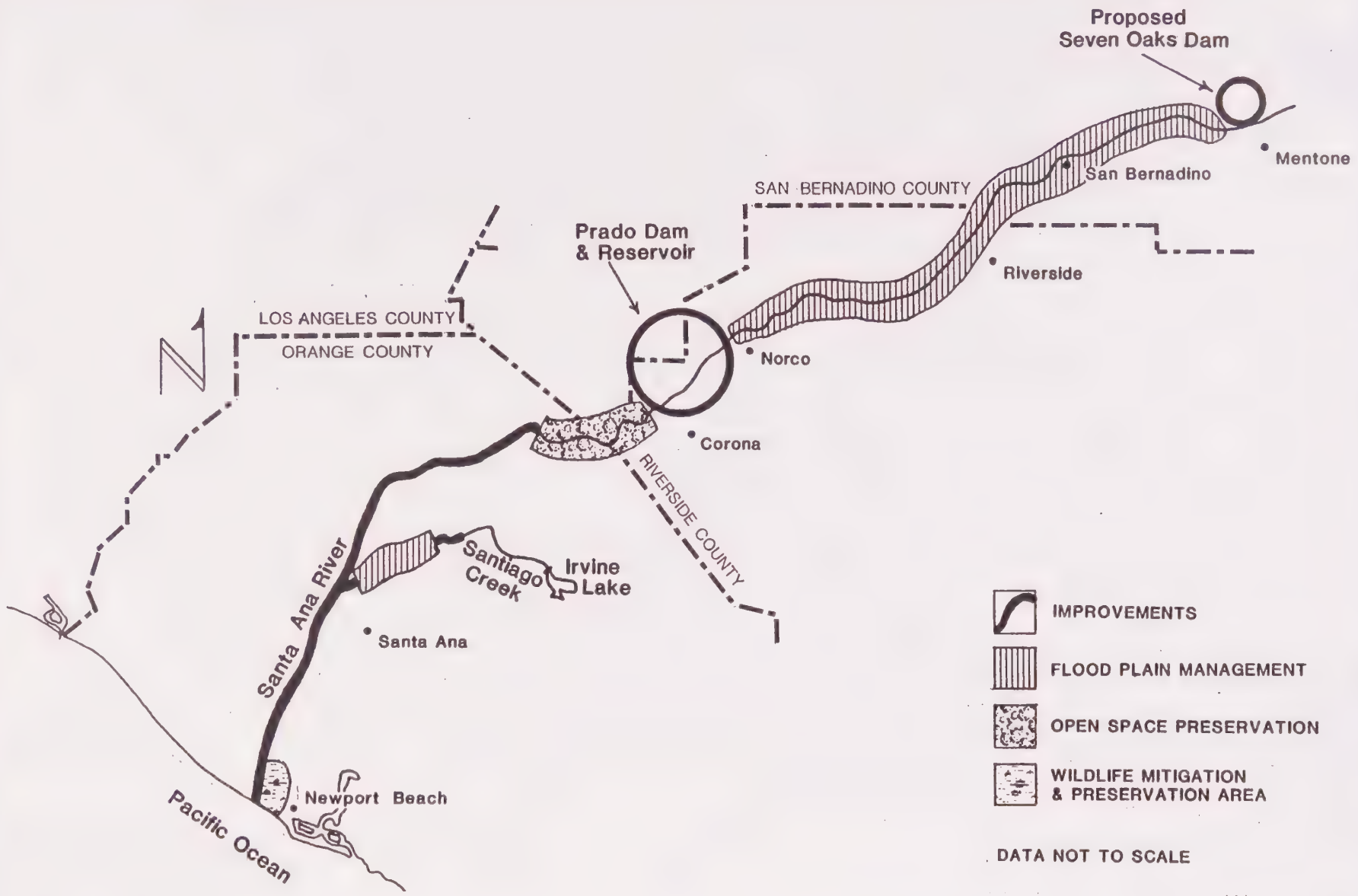
d. Description of Orange County Flood Control Facilities

Actions to reduce flood potential in Orange County are shared by the federal government, the Orange County Flood Control District and local jurisdictions.

1) Federal Government

The federal government assists local jurisdictions to implement major flood control facilities. In Orange County the most significant of these flood control facilities is the Santa Ana River system. The U.S. Army Corps of Engineers, beginning in 1975, recommended the implementation of the Santa Ana River Main Stem Federal Project (previously the All-River Plan), over four other options, as the preferred means of providing main-stream physical control over potential Santa Ana River flood waters in the event of a Standard Project Flood (SPF). The plan calls for significant improvements to the Santa Ana River system. The Santa Ana River Main Stem Federal Project (see Map 2-20), contained in the Water Resources Development Act of 1986 (PL 99-662), was signed by the President on November 17, 1986. As signed by the President, the Act authorizes the following Santa Ana River improvements:

- Raise Prado Dam and increase reservoir capacity;
- Construct a new dam to be called "Seven Oaks Dam" on the Santa Ana River northeasterly of the communities of East Highlands and Mentone;
- Implement flood plain management between Seven Oaks and Prado dams;
- Acquire the floodway in the Santa Ana Canyon reach of the river to carry the water releases from Prado Dam, providing some structural protection along certain bends in the river, but maintaining the natural conditions as much as possible as a floodway and for environmental enhancement;
- Construct channel improvements in the Coastal Plain reach of the river below Santa Ana Canyon, on Santiago Creek (in Santa Ana, Orange, and Villa Park), and on Oak Street Drain (in Corona); and
- Reconstruct existing recreational facilities.



NOTE: This map is for informational purposes only

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SANTA ANA RIVER MAIN STEM PROJECT

SOURCE: Orange County

map
2-20

2) Regional System

Orange County Flood Control District

The Orange County Flood Control District (OCFCD) is empowered to construct and maintain flood control works to prevent or minimize loss of life and property caused by flooding and to conserve water. The Environmental Management Agency (EMA) implements the Flood Control District's funded activities program which includes the design, construction, operation and maintenance of regional flood control facilities.

The Flood Control District program is assisted by the City Engineers Flood Control Advisory Committee (CEFCAC), which is composed of one City Engineer from each Supervisorial District appointed by the Orange County Division, League of California Cities and a County representative designated by the Director, EMA. Project proposals from all sources are analyzed by Flood Control District staff and submitted to CEFCAC for project recommendations and priorities. The recommendations are utilized by EMA in preparing the annual Flood Control District budget request.

Flood Control District revenue is obtained mainly from property taxes. Under the provisions of Section 97 and 98 of the Revenue and Taxation Code, the amount of Flood Control District revenue derived from property taxes is based on the average percentage received during the three years prior to the passage of Proposition 13, plus a proportionate share of the subsequent tax base growth. Subsequent to the passage of Proposition 13, State Special District augmentation funds have also been received.

Orange County Floodplain Management

Floodplain management is a key component to effective flood control within Orange County. The Federal Insurance Administration delineates through official maps, Flood Insurance Rate Map (F.I.R.M) and Flood Boundary and Floodway Map, areas of special flood hazard, the risk premium zones and floodways applicable to a community. These maps form the basis for Orange County's flood plain management program implemented through zoning regulations. These zoning regulations (Section 7-9-113 of the Orange County Zoning Code) are intended to be applied to those areas which are subject to periodic flooding and accompanying hazards.

Three levels of floodplain protection are identified. The FP-1 designation is applied to the "floodway," the channel of a river or other watercourse and that part of the floodplain reasonably required to safely discharge the base flood, as shown on the federal Flood Boundary and Floodway Maps or areas the County has identified as a floodway. The FP-1 designation permits private flood control facilities, general open space uses and public/private utility structures. The FP-2 designation is applied to areas identified on Federal Flood Insurance Rate Maps

or areas identified by the County to be within a special flood hazard area. Development is permitted within FP-2 areas in compliance with specific development standards, including construction and design elements that minimize flood damage, and raising the lowest floor of a building including a basement or cellar one foot above the flood level. The FP-3 designation is applied to areas shown on the Flood Insurance Rate Maps or designated by the County to be susceptible to coastal flooding by the "Coastal Flood Plain Development Study." Development is permitted within the FP-3 areas subject to satisfaction of design criteria contained in the "Coastal Flood Plain Development Study."

The purposes of floodplain zoning regulations as applied by the County include prevention of loss of life and property and to minimize economic loss caused by flood flows; establishment of criteria for land management and land use in flood-prone areas that are consistent with the criteria promulgated by the Federal Insurance Administration for the purpose of providing flood insurance eligibility for property owners; regulation and control of use of land below the elevation of the design flood flow within the floodplain; and, compliance with the Cobey-Alquist Floodplain Management Act requirements for floodplain management regulations. Adherence to the Act's provisions entitles a local jurisdiction to receive state financial assistance for flood control project rights-of-way costs.

Local Drainage Program

The County's Local Drainage Program constructs storm drain facilities in the unincorporated portions of the County in order to correct localized flooding problems which are not of sufficient magnitude to include in the Flood Control District Program. A similar local drainage program is carried out by each of the 26 cities in the county.

Storm drains are normally smaller facilities which collect drainage from local streets. In new developments, local drainage facilities are constructed by developers in accordance with master plans of drainage. However, in many older parts of Orange County, local systems were not built due to lack of major systems to accept their discharge. This program allows for implementation of the needed local drainage facilities as County General Funds are made available.

e. Future Prospects

As urban development occurs and replaces soils with impervious surfaces in the Santa Ana River watershed and other Orange County watershed areas, storm runoff will increase. When stream flows exceed channel capacity or exceed reservoir and dam capacity, rivers overflow their banks onto their floodplains. Options to reduce flood losses involve the control of development within floodplains, land management throughout the watershed to reduce flood volumes via soils retention and construction of facilities to convey or retard flows for the physical control of potential flood waters.

The implementation of the Santa Ana River Main Stem Federal Project and other Santa Ana River improvements along with regional and local flood control facilities should provide Orange County with appropriate flood protection safeguards. Due to fiscal constraints, the approximate $1.2 billion backlog of regional and local improvements implemented at a rate of $10 million a year will take well into the next century to construct. However, long-term protection and improved coordination between local, state and federal governments should allow continued development of communities within the watershed with minimal adverse impacts.

2. Seismic Safety and Geologic Hazards

a. Introduction

Orange County, like most regions that border the Pacific Ocean, is a region of high seismic activity and, therefore, is subject to potentially destructive earthquakes. Earthquakes are the result of an abrupt release of energy stored in the earth. This energy is generated from the forces which cause the continents to change their relative position on the earth's surface; this process is called "plate tectonics." Large earthquakes are caused by the rupturing of great rock masses under strain within the earth's crust. This usually takes the form of abrupt slipping or sliding along a rupture plane (fault). Each time two segments of the earth's crust suddenly shift past one another along a fault, an earthquake occurs. Major earthquakes are commonly accompanied by foreshocks and aftershocks which are usually less intense and represent local yielding and adjustments of rock masses along the main zone of faulting.

Earthquakes create two types of hazards: primary and secondary. Primary seismic hazards include ground shaking, ground displacement, subsidence and uplift due to the seismic episode. Primary hazards can, in turn, induce secondary hazards. These include the following: ground failure (lurch cracking, lateral spreading and slope failure), liquefaction, seismically induced water waves (tsunamis and seiches), movement on nearby independent faults (sympathetic fault movement) and dam failure.

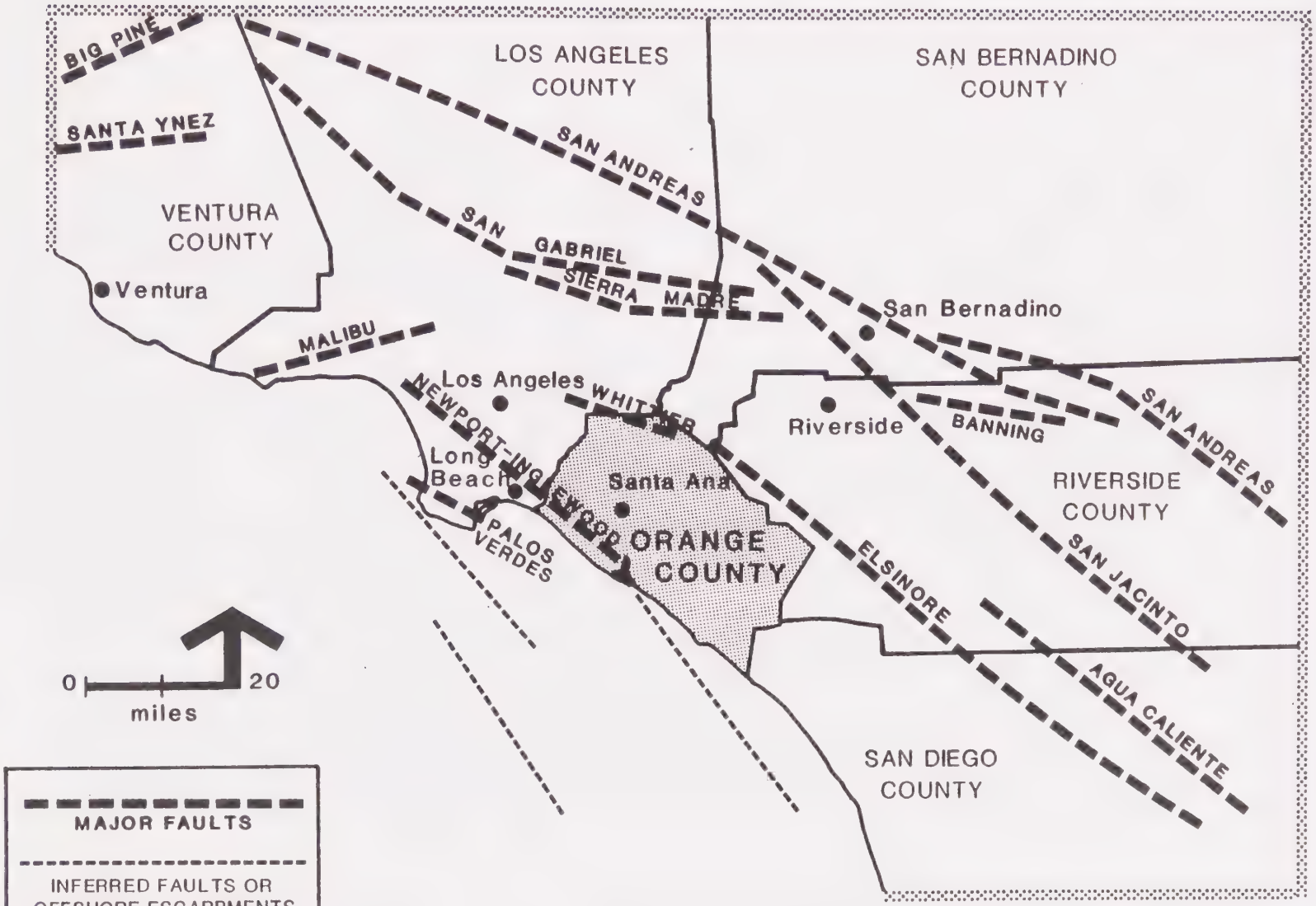
Orange County residents are exposed to other geologic hazards not necessarily associated with earthquakes. Landslides result from the movement of slope-forming earth or rock materials downward under the influence of gravity. A landslide may take the form of a flow, slide, fall, or a combination of the three. This form of earth movement is the most costly of the non-seismic geologic hazards. Two other geologic hazards, subsidence and uplift, are caused by vertical mass movements of earth materials with little or no lateral movement.

Erosion of fields, cliffs and stream channels has been of concern to man for centuries. The process of erosion occurs naturally in nature; however, it can be induced and encouraged by man's activities. One example is river channelization which impedes transportation of sediments to the coast. Since beaches depend on sediments to replenish sand supply, sediment reduction leads to beach and cliff erosion, a major County safety concern. A final non-seismic hazard described in this section is associated with soil characteristics.

b. Existing Conditions

1) Seismic

Orange County is more fortunate from a seismic safety standpoint than some of its neighboring counties. Two potentially hazardous fault zones run along the coastal and inland edges of



Note: This map is for informational purposes only.

FAULT MAP

source: ORANGE COUNTY EMERGENCY MGMT. DIVISION 1986

map 2-21

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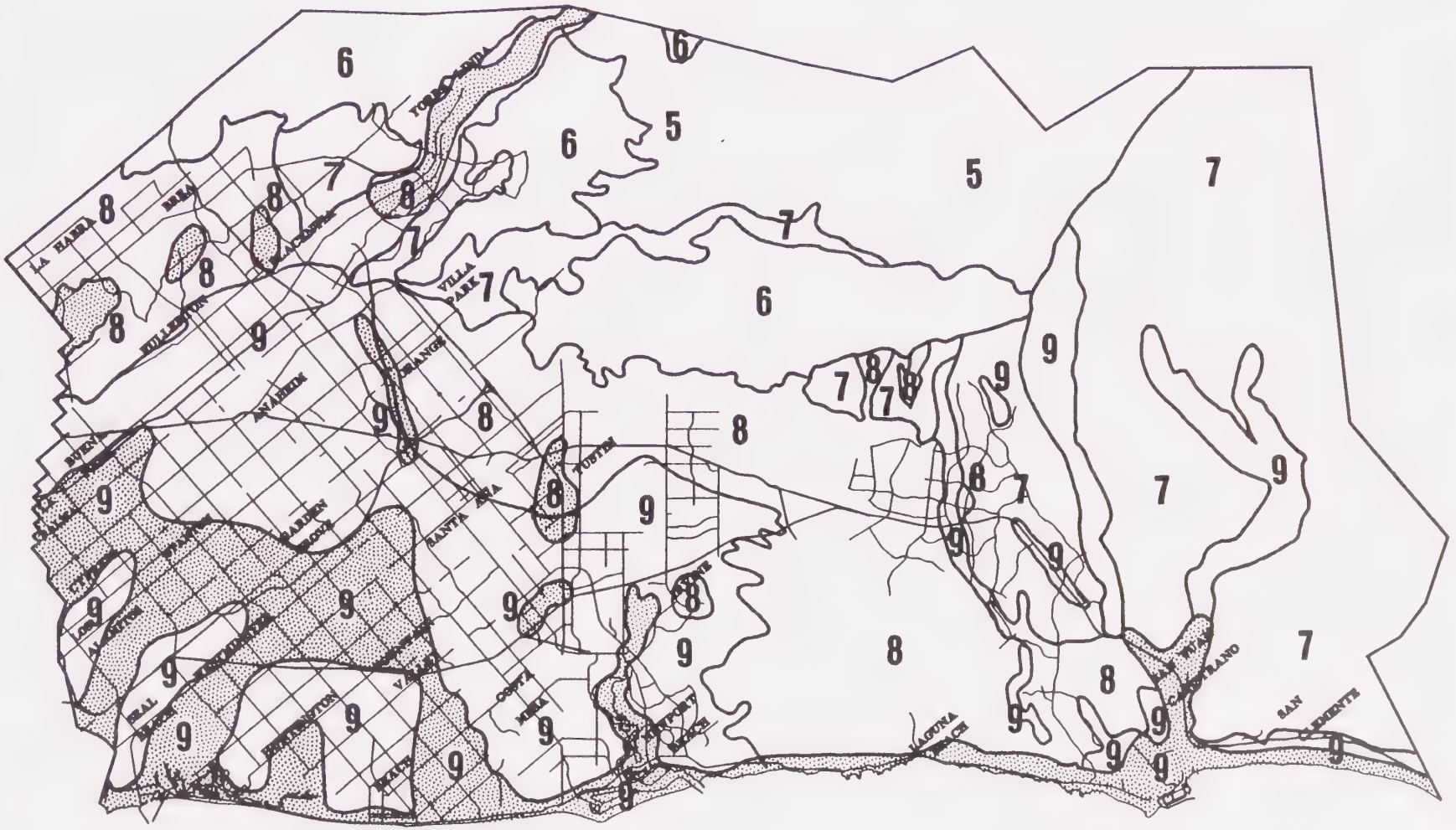
the County. (See Map 2-21.) The best known of the two faults is the Newport-Inglewood Fault, which angles from offshore near Dana Point, inland through what is now the City of Newport Beach, on into Los Angeles County through the cities of Long Beach and Torrance. This fault zone produced the catastrophic 1933 Long Beach earthquake with a Richter scale magnitude of 6.3. It is believed this fault is capable of generating a maximum credible 7.5 magnitude earthquake.

Paralleling this fault zone across the northeasterly edge of the County is the Whittier Fault, believed to be the main spur from the larger Elsinore Fault which follows a general line easterly of the Santa Ana Mountains into Mexico. Most recorded shocks in this zone range from 4.0 to 5.0 magnitude, which is considered moderately active. However, in 1910 an earthquake registering 6.0 on the Richter scale hit Riverside County in the vicinity of Lake Elsinore. It is estimated that the maximum credible earthquake capable from the Whittier-Elsinore Fault Zone is 7.0 magnitude.

Earthquakes on faults located outside the county can cause damage within the county. Depending on their magnitude, earthquakes generated within a fifty-mile radius of a given point are considered noteworthy and could cause minor to moderate damage. For Orange County, these perimeter faults are: San Andreas; San Jacinto (including Imperial and Superstition Hills); Malibu-Coast-Raymond; Palos Verdes; San Gabriel; and, Sierra Madre-Santa Susana-Cucamonga faults (including "San Fernando"). The Norwalk and El Modeno Faults, located within Orange County, between the Whittier and Newport-Inglewood faults, are both considered inactive. Additional faults located in the Los Angeles County region which are capable of generating destructive earthquakes and surface rupture can be seen on Map 2-21.

Due to the proximity of active and potentially active faults in and around Orange County and its degree of urbanization, the risk of structural damage and loss of life due to ground shaking is considerable. The risk of secondary hazards is also great. According to various geologic experts, much of Orange County is highly susceptible to slope failure (activated by ground shaking), lurching and displacement. Another secondary hazard of particular concern to some portions of Orange County is that of liquefaction.

Liquefaction is a property of saturated sand or coarse silt. When these materials are vibrated, they often behave as a heavy liquid. Liquefaction occurs when saturated soil changes from a solid to a fluid condition as a result of excess pore pressures caused by dynamic or static loading. Liquefaction depends on the relative density (degree of soil compaction) of the material before it was saturated, the average grain diameter, grain size distribution, and the duration and intensity of shaking induced by the quake. Maps 2-22 and 2-23 show the areas of liquefaction and degree of ground shaking for various areas around Orange



LIQUEFACTION AREA
GRANULAR SANDY SOIL WITH HIGH WATER CONTENT

9 MODIFIED MERCALLI INTENSITY SCALE (SEE TEXT)

0 4
miles

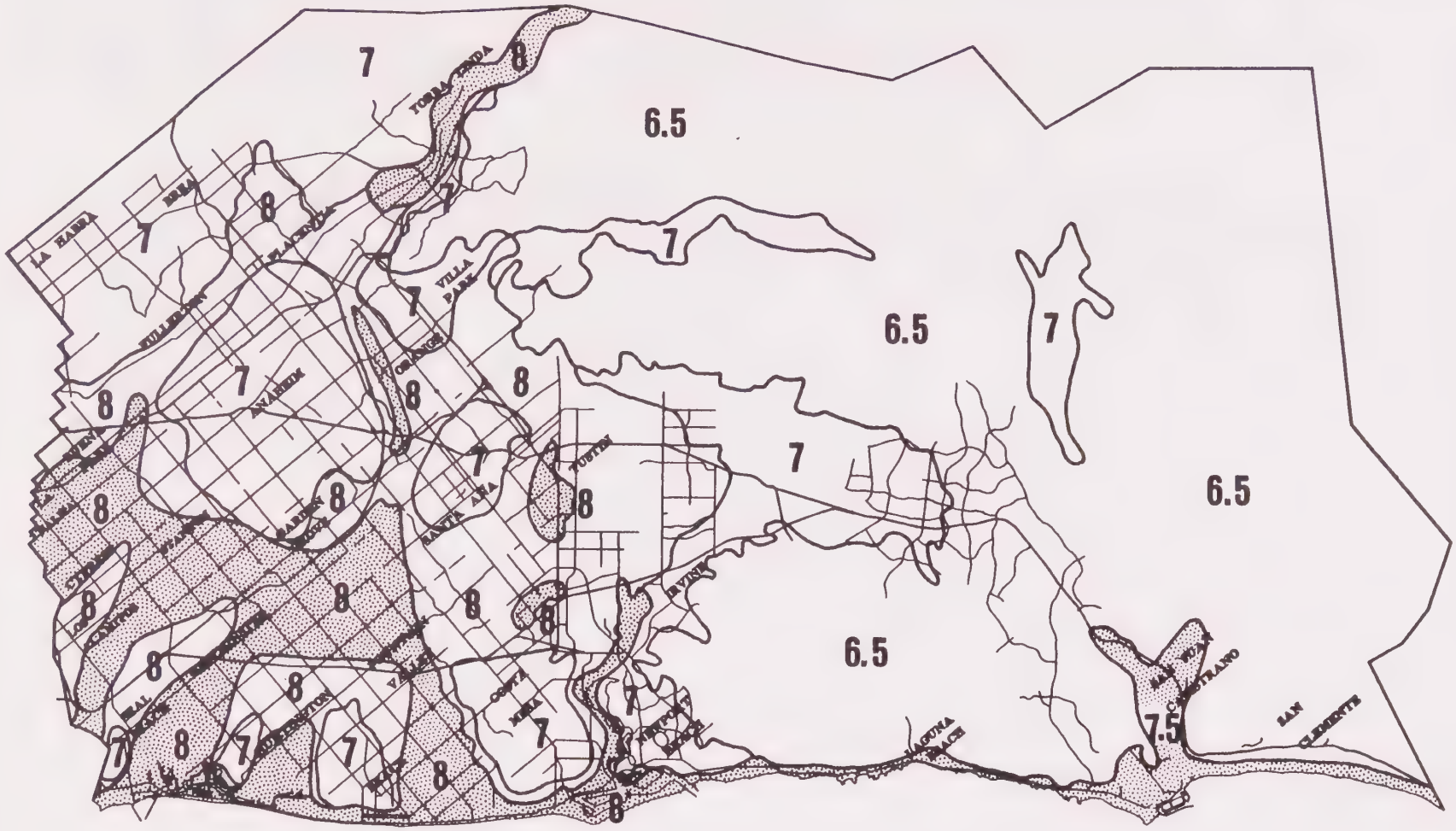
Note: This map is for informational purposes only.

SAF-2-79

7.5 NEWPORT-INGLEWOOD FAULT

source:
ORANGE COUNTY FIRE-
EMERGENCY MGMT. DIVISION

map
2-22



LIQUEFACTION AREA
GRANULAR SANDY SOIL WITH HIGH WATER CONTENT

9 MODIFIED MERCALLI INTENSITY SCALE (SEE TEXT)

0 4
miles

Note: This map is for informational purposes only.

8.3 SAN ANDREAS FAULT

source:
ORANGE COUNTY FIRE-
EMERGENCY MGMT. DIVISION

map
2-23

SAF-2-80

County in the event of a maximum credible earthquake on the San Andreas or Newport-Inglewood faults. Table 2-8 describes the effects experienced during varying degrees of ground shaking. The numbers down the left hand side (1 to 12) represent the Mercalli Scale while the numbers in parentheses represent comparable ground shaking as recorded on the Richter Scale. The Mercalli and Richter scales are two means of measuring ground shaking during an earthquake.

Another potential secondary source of damage is from the generation of seiches and tsunamis. A seiche is the oscillation or sloshing of water caused by seismic activity or landsliding. It may occur in a lake, bay or other enclosed body of water. It may result in damage to peripheral shore development or to downstream development if water tops a dam. Orange County's greatest potential damage from dam failure comes from just outside the county: Prado Dam on the Santa Ana River. Irvine Dam poses another threat along Santiago Creek. While the possibility of its failure is much greater than that of Prado Dam, the resultant damage would be less. A comprehensive discussion of dam failure can be found in the Flood Hazards Section of this Element.

Tsunamis, or seismic sea waves, may be generated by an undersea earthquake, landslide or by volcanic activity. Tsunamis are waves generated by the displacement of a body of water. These waves travel in the open ocean at speeds approaching 500 miles per hour. As the wave approaches the shore, the ocean bottom shallows and the energy carried by the wave is funneled into the shallower water thus causing the wave heights to increase. The Orange County coastline is shielded to the west by the Channel Islands and to the north by Point Conception from most sources of tsunamis, thereby reducing the threat of damage.

Another serious secondary water damage hazard emanates from linear systems failure. This condition involves the bursting of underground water pipes and mains. Its effects may be widespread, crippling entire communities. If failures occur on main trunk lines, entire regions of Orange County may be without public services. These types of failures could result in situations ranging from contamination of drinking water to an inability to successfully fight fires which may be caused by other linear system failures, such as gas or oil lines or electrical transmission lines.

2) Non-Seismic

In addition to the safety hazards posed by seismic activity, other types of geologic features also occur which pose a potential threat to the well-being of county residents, their homes and businesses. These geologic events include landslides, subsidence and uplift, natural erosive forces, and potentially dangerous soil characteristics (expansive, peat, sulfate, gaseous and corrosive soils, and soils subject to hydroconsolidation).

1. Not felt except by a very few, and only under special circumstances. (Below 3.0 magnitude on Richter Scale.)

2. Felt by persons at rest and on upper floors. (3.0-3.9 magnitude on Richter Scale.)

3. Felt indoors. Hanging objects swing slightly. Vibration feels like passing of light trucks. May not be recognized as an earthquake. (3.0-3.9 magnitude on Richter Scale.)

4. Hanging objects swing noticeably. Vibration like passing of heavy trucks. Standing automobiles rock. Windows, dishes, doors rattle. Glasses clink. Wooden walls and frames creak. (4.0-4.9 magnitude on Richter Scale.)

5. Felt outdoors by most people. Sleepers awakened. Liquids may spill. Small unstable objects displaced. Doors swing, close, open. Pictures move. Some breakage of plaster. (4.0-4.9 magnitude on Richter Scale.)

6. Felt by all. Persons walk unsteadily. Windows, dishes, glassware broken. Objects, books, etc., off shelves. Pictures off walls. Furniture moved or overturned. Weak plaster and masonry cracked. Small bells ring (church, school). Trees, bushes shaken visibly. (5.0-5.9 magnitude on Richter Scale.)

7. Difficult to stand. Noticed by drivers of automobiles. Hanging objects shake. Furniture broken. Weak chimneys broken at roof line. Fall of plaster, loose bricks, stones, tiles, cornices; also unbraced parapets and architectural ornaments. Waves on ponds; water turbid with mud. Small slides and caving in along sand and gravel banks. Large bells ring. Concrete irrigation ditches damaged. (6.0-6.9 magnitude on Richter Scale.)

8. Steering of automobiles affected. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, towers, elevated tanks. Frame houses moved on foundation if not bolted down; loose panel walls thrown out. Branches broken from trees. Cracks in wet ground and on steep slopes. (6.0-6.9 magnitude on Richter Scale.)

9. General panic. Masonry destroyed or heavily damaged. General damage to foundations. Frames cracked. Serious damage to reservoirs. Underground pipes broken. Conspicuous cracks in ground. (7.0-7.9 magnitude on Richter Scale.)

10. Most masonry and frame structures destroyed with their foundations. Some well built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. Rails bent slightly. (7.0-7.9 magnitude on Richter Scale.)

11. Rails bent greatly. Underground pipelines completely out of service. Damage severe to wood frame structures, especially near shock centers. Few, if any masonry structures remain standing. Large, well built bridges destroyed by the wrecking of supporting piers or pillars. (8.0-8.9 magnitude on Richter Scale.)

12. Damage nearly total. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into air. (8.0-8.9 magnitude on Richter Scale.)

Source: Orange County Fire Department, Emergency Management Division, 1986.

a) Landslides: Landslides may be divided principally into three overlapping categories: surficial failures, rotational slides, and planar slides. Surficial failures, the most common failures, occur generally within four to five feet of ground surface. In rotational slides the failure surface takes an arcuate shape both in horizontal and vertical profile. Planar slides result when natural planes of weakness within a rock formation are exposed either by the natural process of erosion or during grading operations.

A major factor contributing to these three types of slides is the process of grading. The lack of precautionary measures to stabilize slopes or cutting into the failure plane of an existing landslide can result in the failure of material or slopes.

Another common thread of similarity among all three categories of slides is that water saturation of all or part of the materials is involved. When water saturation of soil occurs, the soil's carrying capacity is decreased. This weakening, coupled with gravitational factors and the various characteristics of the soil material, leads to destructive outcomes.

Other types of sliding that occur are mudflows, debris avalanches, rockfalls, rockslides, and gravity sliding. These landslides are either variations between or gradations within the three individual categories.

Devastation and economic setback from landslides were exhibited in the October 1978 Laguna Beach/Bluebird Hill slide in which 25 homes were lost and 15 million dollars in damage was done. The slide area covered 3.5 acres--part of a five-acre ancient slide area. In February 1980, Laguna Beach was struck by mudslides which damaged 117 homes and 35 businesses and totaled an estimated 5 million dollars in damage. In May 1983, several private homes in Silverado Canyon were severely damaged by rock and debris flow. These residences were evacuated and the public road use was restricted to local residents and essential traffic. Because of recurring rockfall and debris flows endangering life and property of residents in Silverado Canyon, the Board of Supervisors authorized, on May 18, 1983, a geotechnical review of the mud/debris flow and rockfall hazards. On a more recent note, San Clemente--dubbed by geologists as physically "least stable" of Orange County cities due to its propensity for unstable slopes--was hit on September 4, 1986, by a landslide. This slide caused five homes in the Shorecliffs development to be evacuated after they were left teetering on an 80 foot high precipice. Many other incidences of landslides have been recorded and other areas identified as ancient landslide sites which are dormant but can become active again, much like volcanoes.

Most of Orange County--which like the rest of the state is characterized by active earthquake fault lines and ancient volcanic activity--is covered by soils deposited by surface water, sand, ancient landslides and dry deposits that constantly expand and contract with the addition and removal of moisture. Orange County has a commitment to an intensive effort to examine landslide potential. The lead agency in this effort is the Grading Section of the Orange County EMA. This division is responsible for the following: 1) the critique of consultant work on various construction projects; 2) the production of soil and geologic reports; and 3) the implementation of landslide mitigation measures.

Major policy aiding in the efforts of the grading section include the Orange County Grading and Excavation Code, adopted by the Board of Supervisors for the purpose of safeguarding life, land, property, and public welfare by regulating grading on private property in the unincorporated areas of Orange County. The Grading and Excavation Code sets forth rules and regulations to control excavation, grading and earthwork construction, including fills and embankments, and establishes administrative requirements for issuance of permits and approval of plans and inspection of grading construction in accordance with the requirements for grading and excavation as contained in the Uniform Building Code.

The Grading Manual, another tool adopted by the Board of Supervisors, is to assist users of the grading code by supplementing it with detailed information regarding rules, interpretations, standard specifications, procedures, requirements, forms and other information applicable to control excavation, grading and earthwork construction in unincorporated Orange County.

b) Land Subsidence and Uplift: Subsidence and uplift are terms used to describe changes in elevation occurring over reasonably large areas. Subsidence can be either caused by forces within the earth's crust or by withdrawal of fluids such as oil or water, or solids such as soil or rock. Oil extraction differs from groundwater extraction mainly because much greater depths, greater pressures, and a greater danger of subsidence are involved. Uplift on the other hand, is the result of the injection of water or another liquid, into the ground to replace material removed.

Orange County monitors subsidence occurring in the County and publishes the findings in its annual Subsidence Study. According to the report released in 1984, a notable case of subsidence is occurring in Huntington Beach. In an area along Pacific Coast Highway near Goldenwest Boulevard, the ground has subsided approximately 11 inches due to the pumping of oil from the ground. Although water is being pumped back into the ground to recharge the well pressure, subsidence continues to occur at a rate of approximately one

inch per year. There are currently no mitigation measures being imposed by the County; however, oil companies operating in the area are monitoring the situation.

c) Erosion: Erosion is the process by which earth and rock materials are worn away and transported by the action of water, wind or ice.

Beach erosion has damaged or destroyed both functional structures and appurtenant erosion protection devices. Topsoil loss due to erosion in agricultural areas led to the formation of the Federal Soil Conservation Service, which conducts research and provides consultation to minimize this loss. Stream erosion and siltation have long constituted major hazards to cities and to man-made facilities situated alongside or straddling water-courses. Soil loss and stream erosion are addressed in the Resources Element of the Orange County General Plan. Beach erosion problems, however, are considered in this element.

(1) Beach and Cliff Erosion

Beach and cliff erosion problems are a major concern in Orange County. This process is influenced to the greatest degree by man-made changes and obstructions in the ocean affecting the coastline. Other factors are wind, interference with stream processes, wave height and direction, tides, and sand lost to deep ocean basins.

Whenever waves are present, sand moves on or off beaches. Major movements often occur during wave storms. Waves are more energetic than usual then, and storm-induced, longshore and offshore-directed currents provide a means to transport the wave-mobilized sand away from or towards the beach. This movement is wholly or partially reversible in that the sand volume lost from the beach during the storm may be partially or completely returned to the beach after the storm. In general, seasonal changes in the beach profile will be much greater than the net yearly change that occurs over a period of many years. The sand supply is also renewed by the sediment load of rivers and streams emptying into the ocean. This latter process does not occur at a constant rate. Although influenced by such factors as the lining of flood control channels, the damming of rivers and streams is a much more important factor in reducing the amount of sediment carried to the ocean.

Beach cliff erosion is a major concern to development along coastal Orange County. The erosion of cliff sides causes landslides and subsequent problems to hillside development. The erosion rate in Orange County is considered moderate countywide (approximately 1" per year). Although various development and zoning

standards have been devised, no programs have been devised to specifically control beach cliff erosion.

Technical criteria and guidelines were prepared for Orange County EMA Flood Control by Moffat and Nichol Engineers. This study, "Coastal Flood Plain Development, Orange County Coastline," was created for the review of structures and coastal protection devices at five coastal reaches in Orange County. Using 1984 coastal design data, Moffat and Nichol developed three recommendations for improving beach erosion protection:

(a) Establish a methodology to update and improve the coastal design data sets as new information becomes available;

(b) Establish a procedure to obtain local information using a combination of trained County staff and beach-resident volunteers; and

(c) Establish a geotechnical data bank for coastal design review purposes.

The implementation of recommendation one has occurred through the creation of floodplain zones and other appropriate policy. The implementation of the remaining recommendations would ensure an improved data set will be available for future design purposes, including beach restoration and maintenance.

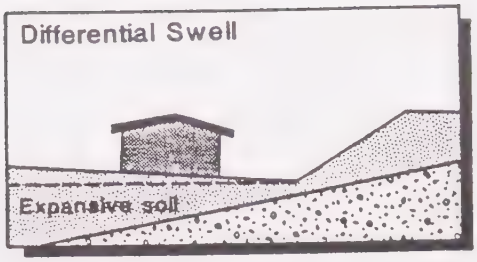
d) Soil Characteristics

Expansive Soils: These are soils which incorporate water into their mineral structure. This process causes swelling of mineral grains and an increase in soil volume. The degree of soil expansion is determined by the percentage and types of minerals in the soil. In addition, the amount of water a soil can incorporate depends on the stress on the grains created by the combined weight of soil and man-made structures.

Much of Orange County is covered by soil that experts say may cause cracking in concrete foundations. The most prevalent problems stem from clay or "expansive" soil which expands and contracts with moisture, causing building foundations, sidewalks and swimming pools to lift and crack. Geologists indicate that three predominant soil conditions exist in residential areas of Orange County. Possible effects of "expansive" soil conditions exist in each of the three predominant soil conditions:

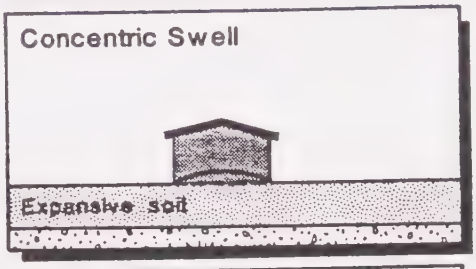
(1) Differential Swell

The thicker zone of expansive soil causes more swelling at one side of the residence than at the other.



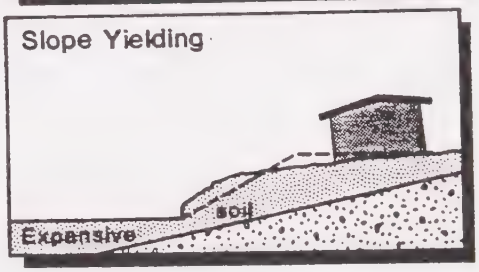
(2) Concentric Swell

Water migration beneath a foundation causes swelling in its center.



(3) Slope Yielding

The soil shifts downslope, tilting the foundation.



Problems attributed to expansive soils are usually related to improperly designed or constructed foundations. Due to the diversity of soil conditions in Orange County, experts agree that no residence is completely safe from cracking, slipping or sinking to some degree, regardless of the residence's age or location. Currently, problems attributed to expansive soils are being mitigated through structural and design regulations as well as through soil treatment techniques.

Peat Formations

In the process of coal formation from masses of vegetation, peat is the earliest stage of conversion. It consists of mats of partly decayed vegetable matter which may or may not be covered by sediment. Accumulation of peat can occur in various ways including sand beach bars blocking coastal streams; generation of sag ponds by faulting; and, historically common in Orange County, abandonment of stream meanders by a river cutting a new path.

The hazards are created when structures are placed on a land surface underlain by a peat deposit. The structure may be damaged by collapse of the peat mat or by fires generated by accumulation of methane gas beneath the structure. Currently, hazards caused by peat deposits are mitigated through initial consolidation or removal of the peat material prior to construction.

Sulfate Soils

Soil containing an unusually high sulfate content can cause the concrete slab upon which houses are built to crack, crumble and break apart. This is due to the presence of destructive sulfates - a salt-like substance derived from sulfuric acid. It is most notably detected by telltale cracks in the concrete which is accompanied by a characteristic white, powdery substance.

In Orange County this problem is particularly prevalent in La Palma where 50 to 100 homes in a single tract were affected in late 1985. As many as 100 additional homes may have cracked and, in some cases, crumbling floors. Without repairs to replace the concrete slab, the entire structure of the houses can be endangered.

Many reasons have been offered by various engineers as to why there are high sulfate soils in some areas and not others. These experts cite explanations which range from factors associated with previous usage of the property (e.g., dairy operations which have large volumes of animal droppings), to usage of cement additives which react negatively with the soil. Presently, regulations and design standards in the Uniform Building Code describe specific cement types to be used in construction which is directly exposed to soil or water containing sulfate concentrations.

Gaseous Soils

In March 1985, a fire and explosion in the Fairfax area of Los Angeles occurred, drawing attention to a potential safety hazard caused by the natural accumulation of gas within the soil. Naturally occurring gas within the soil is often caused by bacterial activity (i.e., biogenic gas) and is not associated with petroleum.

In an effort to preclude further occurrences, the State legislature enacted Senate Bill SB 1458 (Roberti) directing the Department of Conservation, Division of Oil and Gas to select and survey areas suspected of containing the greatest potential for hazardous gas accumulations. Three criteria were utilized to identify suspected areas: 1) the areas must be urban; 2) the areas must have oil and gas wells that were abandoned prior to 1930; and 3) the areas must have a history of natural oil and/or gas seepage. Based upon the three criteria, eight high risk areas were identified within Southern California. Three sites were identified within Orange County: Newport oil field (City of Newport Beach); Brea-Olinda oil field (City of Brea); and Huntington Beach oil field (City of Huntington Beach) (see Map 2-24).

The conditions involving Newport Beach and Huntington Beach are similar. Residents in the two areas have reported seepage problems. In both areas, methane gas monitors are seen as a feasible means of monitoring gas accumulations coupled with a program of vent wells to release gas.

The Brea-Olinda oil field, located in an undeveloped portion of the county, is faced with steadily encroaching development. The recommendation of the study report prepared in October 1986 for the Department of Conservation suggests there are no clear economically feasible methods to remove or mitigate the problems at this site. Further, the report concludes that residential and commercial uses should not be developed until significant mitigation measures are taken.

Corrosive Soils

Soils become corrosive to metals when they are abnormally acidic (low PH) or saline (high chlorine content with low resistance to electrical current). Metallic pipes and structures can be protected by various coatings, wrappings and cathotic devices. Without this protection, the life of the metallic structures are greatly shortened with resulting cost increases.

Hydroconsolidation

Hydroconsolidation is a condition which occurs closer to the ground surface as compared to the similar condition of subsidence. The honeycomb-like composition of the soil contributes greatly to the failure of the soil. When built upon or covered over with fill, this weakly supported soil collapses immediately when put in contact with water.

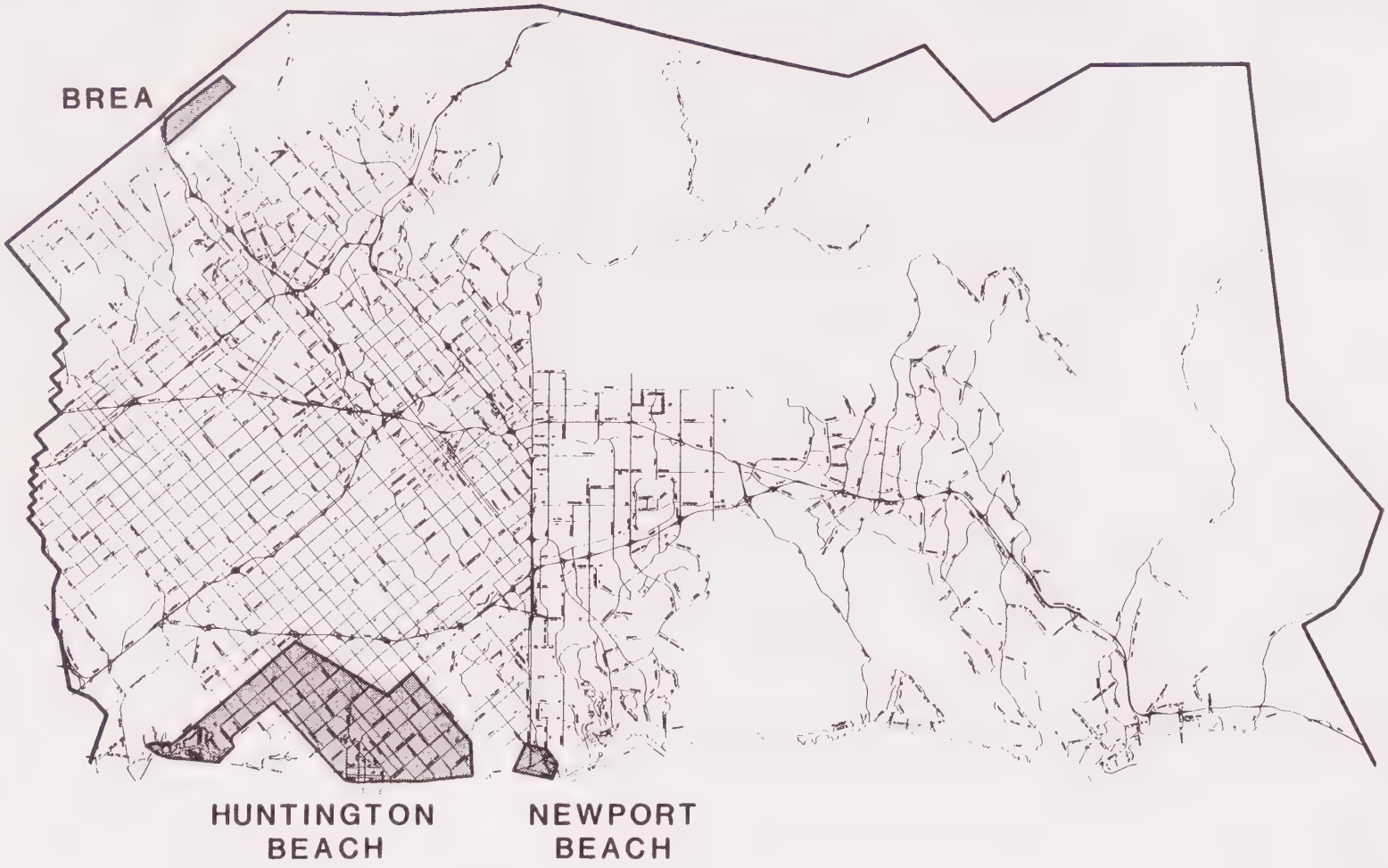
e) Seismic and Geologic Mapping

The California Division of Mines and Geology (CDMG) has produced a series of maps depicting the environmental geology of Orange County. This ten plate set depicts faulting; recency of faulting; earthquake epicenters; liquefaction potential; relative seismic shaking; massive bedrock landslides; mud-debris flows and rockfall; expansitivity potential of soils and rock units; distribution of peat deposits; and, tsunami risk. These maps can be reviewed at the Orange County Environmental Management Agency.

c. Seismic and Geologic Hazard Management

1) Alquist-Priolo Special Study Zone

The State legislature enacted the Alquist-Priolo Special Studies Zone Act in 1972 to assure that homes, offices, hospitals, public buildings, and other structures for human occupancy are not built on active faults. The act includes special study zone criteria and requires a geological investigation before a local government can approve most development projects in a special study zone.



Note: This map is for informational purposes only.

SOIL GAS ACCUMULATION AREAS

source: STATE DEPARTMENT OF CONSERVATION

map 2-24

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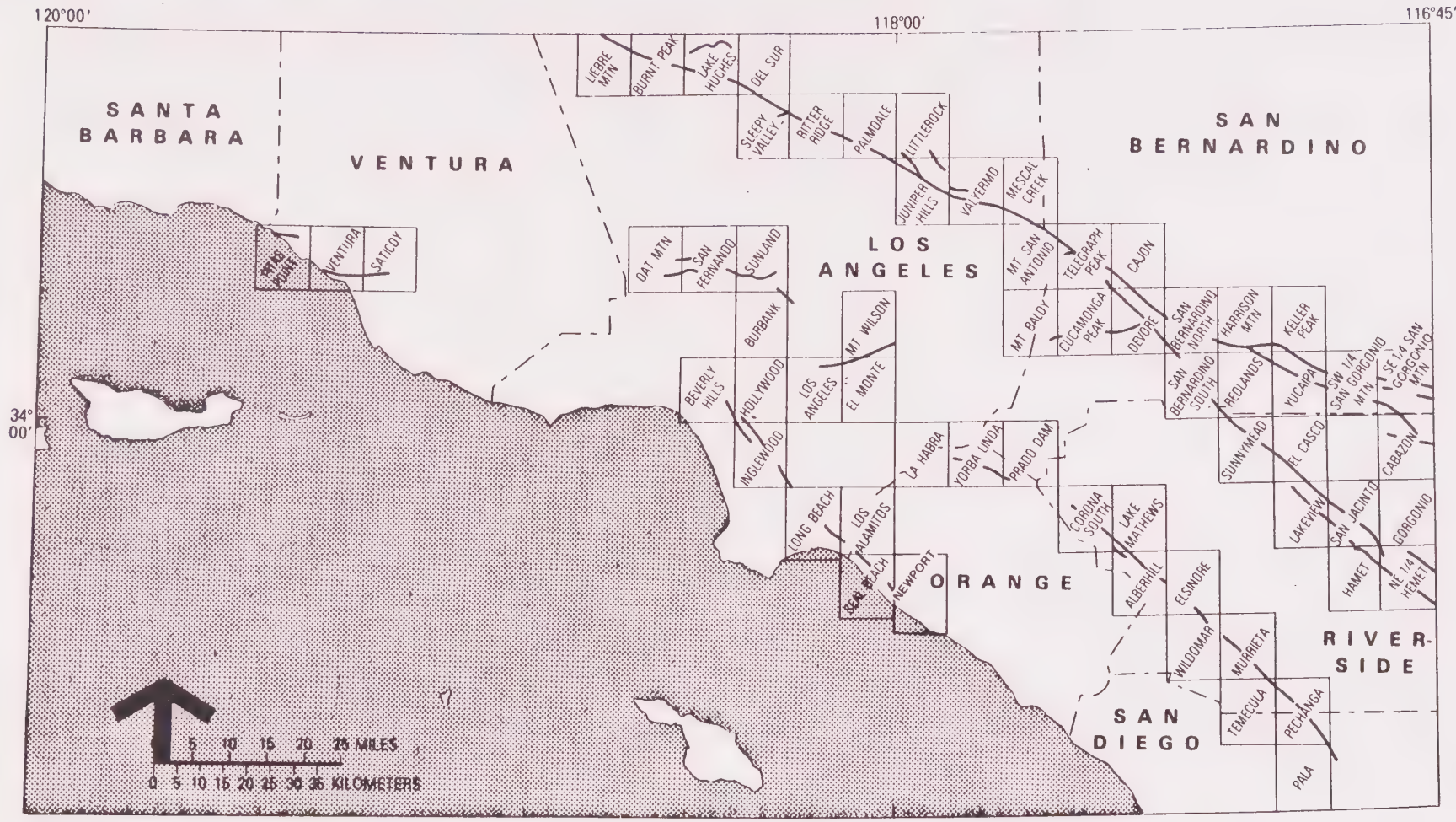
As required under the Act, the State Geologist initiated a program early in 1973 to delineate Special Study Zones which encompass potentially and recently active traces of four major faults (San Andreas, Calaveras, Hayward, and San Jacinto) as well as other "sufficiently active and well defined" faults. There are eight Special Studies Zones which partially include areas bordering Orange County. Specific locations of these zones can be found on Map 2-25. Modifications were made to the study zone surrounding the Newport-Inglewood Fault extending into the Newport Beach quadrangle. This modification, made by CDMG, July 1, 1986, narrowed the study zone from several thousand feet to 700 feet and shortened the zone which now stops just north of Atlanta Avenue in Huntington Beach. Currently, the only Orange County area which incorporates Alquist-Priolo requirements is Bolsa Chica. County programs and policy for implementation of Alquist-Priolo requirements are found in the Bolsa Chica Local Coastal Plan.

2) Orange County/Southern California Earthquake Preparedness Project (SCEPP)

The Southern California Earthquake Preparedness Project (SCEPP) is a State and Federally funded effort to encourage local jurisdictions to prepare for predicted or unpredicted "catastrophic" earthquakes in the Southern California area. SCEPP operates under the auspices of the California Seismic Safety Commission (CSSC) and is concerned with a broad range of issues related to earthquake preparedness planning. The project works directly with local governments, private industry and volunteer groups in a cooperative planning effort, and addresses the full range of earthquake strategies including mitigation (long term prediction response), short-term prediction response, emergency response, and recovery.

Recommendations put forth to the Board of Supervisors by the Emergency Management Council (EMC) in 1984 were adopted, spurring the development of a work plan for SCEPP in Orange County. Through a series of committees established and directed by Fire/Emergency Management Division (EMD) from 1984 to 1985, Orange County/SCEPP drafted 39 recommendations ranging from developing procedures for turning off utilities in all County buildings after a major earthquake, to identifying and correcting non-structural hazards in all County-owned and leased facilities.

These recommendations were submitted to the Board of Supervisors in June of 1986 together with plan and cost estimates for those recommendations requiring funding. The implementation schedule has been time-phased over a 10 year period in order to prioritize tasks and manage County financial resources. This program is on-going. Further information or clarification regarding this project should be directed to the Orange County Fire/EMD.



Note: This map is for informational purposes only.

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INDEX TO SPECIAL STUDIES ZONES MAPS IN THE LOS ANGELES REGION

source: USGS, 1985

map 2-25

3) Buyer Notification Program

The County Buyer Notification Program, established by the Board of Supervisors, is intended to provide prospective home buyers with appropriate information about future development and public facilities planned for the area surrounding a residential subdivision project. Information concerning locations of key facilities are provided on a community project map.

4) Erosion Control

Erosion control measures in Orange County are not confined to beach and cliff erosion, but extend to agricultural lands and bay/estuary protection. Such control measures can be found in the comprehensive erosion control program in effect in the Newport Bay watershed area. This program is voluntary and incorporates a variety of individual elements aimed at specific erosion concerns:

a) Agricultural Best Management Practices (BMP) - This program instructs farmers in various land management practices to reduce soil loss. Because agricultural practices are considered a non-point source of soil erosion, complete reduction of agricultural soil loss is extremely difficult;

b) Construction Activities - This element acts in conjunction with the County's grading ordinance to reduce soil erosion;

c) Foothill Basins Program - This program is aimed at controlling erosion within the foothills; as of yet, the program has not been implemented;

d) In-channel Sediment Control - Sediment control is enhanced through deposition of sediment in the Lower San Diego Creek;

e) Upper Bay Control - Sediment is captured before it migrates to the Upper Bay; and

f) Localization - Sediment is actively managed locally to minimize wide-spread project administration areas.

These programs/elements are monitored by the Environmental Resources Section of the County's Environmental Management Agency.

Other methods of controlling erosion in Orange County exist, including the County's Grading Ordinance which strictly regulates hillside grading with regard to soil stability. It provides for erosion control measures at the time of development. The U.S. Army Corps of Engineers addresses shoreline erosion through participation in shoreline facility construction, management efforts, beach erosion studies, and other shoreline issues.

d. Future Prospects

In view of the County's susceptibility and vulnerability to natural hazards, both seismically and geologically induced, continuing emphasis will be placed on emergency planning; training of full-time, auxiliary and reserve personnel; public awareness and education; and securing sufficient resources to cope with such hazards. Emphasis will also be placed on mitigation measures to reduce losses from hazards.

Planning for these interrelated elements will necessitate coordination on the part of County, City and State agencies charged with the protection of life and property. County agencies will continue to coordinate their efforts through mitigation measures and hazard plans aimed at maximizing this protection.

CHAPTER THREE: CONSTRAINTS AND OPPORTUNITIES

A. Overview

This chapter identifies existing and potential constraints to and opportunities for satisfying the projected safety demands for Orange County. While constraints do not always represent absolute barriers, they may inhibit the timely achievement of important safety objectives. The element's policies and implementation programs contained in Chapters Four and Five (the "Components") are intended to minimize the constraints and to promote the identified safety opportunities.

B. Constraints

1. Environmental Constraints

a. Public Safety: Public safety concerns addressed in this element include crime, fire, hazardous materials and aircraft. The timely achievement of public safety objectives may be negatively affected by geography, geology and climate combined with the inability to predict an occurrence. Fire suppression, for example, is constrained by topography when it precludes or inhibits firefighters from reaching a fire. Wind shifts and other climate changes may also negatively effect fire suppression.

Hazardous materials pose very profound environmental consequences. Their presence in the environment can degrade air-quality and groundwater, severely damaging the food chain. Because of their affects, special care is required to transport, store and dispose of these materials to ensure they do not enter the environment.

Aircraft accidents are unpredictable. Although many accidents occur due to pilot error or aircraft failure, accidents also occur due to the influences of climatic changes and geography. Mountains are natural barriers which establish certain aviator routes. Aircraft straying from established routes or flying in poor visibility conditions heighten the chances of an accident.

b. Natural Hazards: Two natural hazard areas are discussed in this element. They are flood hazards and seismic and geologic hazards. The natural environment affects the ability to predict the extent and magnitude of a natural disaster.

Flood hazard protection is planned and implemented for major stream courses within Orange County. Flood protection devices are normally implemented to mitigate the effects of a predicted event. There is no certainty when such an event will occur and the extent of damage. The same predictability problems exist for seismic hazards. Although fault traces have been identified within Orange County, an earthquake is an unpredictable occurrence.

2. Fiscal Constraints

While operating and capital expenses for many safety related operations have risen, many traditional revenue sources have been cut or impaired,

and spending limitations have been imposed on local governments, thus leaving them faced with reduced revenues for safety related planning at a time of growing need and public awareness. Major fiscal factors constraining local governments today in the provision of safety-related services, programs and facilities include the following:

a. Proposition 13: The passage of Proposition 13 in 1978 seriously limited local property taxes as a major revenue source for local governments. The effects of Proposition 13 are strongly felt by safety services and programs provided by the Orange County Sheriff/Coroner Department, the Orange County Fire Department, the Orange County Flood Control District and other County General Fund users.

b. Proposition 4 (the Gann Initiative): Passage of the Gann Initiative in 1979 placed constitutional limitations on the annual appropriations that can be made by each state and local government entity. The appropriations limit for each fiscal year is based upon the prior fiscal year increased by a factor for inflation and population growth. Excess revenues over appropriation limits must be returned to the taxpayers within the next two years. The effects of the Gann initiative are felt by the Orange County Flood Control District, County General Fund and Fire Department funds and manifests itself in restrictions and reductions in safety related plans, programs and facilities.

c. City Redevelopment Agencies: Redevelopment agencies within Orange County rely heavily on tax-increment financing as a primary revenue source. Under tax-increment financing, the redevelopment agency receives that portion of the property tax levy for an area which exceeds the levy for the base year. The increment represents the property tax revenue that otherwise would have been allocated to each of the area's taxing agents (e.g., Orange County General Fund, Orange County Fire Department and Orange County Flood Control District).

3. Governmental Constraints

a. Conflicting Objectives and Priorities: Competing public needs can result in conflicting priorities and programs. Further, the maze of regulations and standards overseen by a myriad of agencies can result in conflicting purposes, confusion and ineffective programs.

b. Intergovernmental Coordination: It is very important for the federal, state, county, cities and special districts to continue to communicate and to strive for greater coordination and cooperation in order to achieve common goals and objectives relative to safety-related planning.

4. Economic and Market Constraints

a. Hazardous Waste Disposal: Historically hazardous wastes have generally been disposed of in designated landfills. More recently, landfill closure and costs associated with landfill disposal have forced hazardous waste producers to look elsewhere to dispose of their wastes, including on-site treatment prior to disposal.

C. Opportunities

1. Environmental Opportunities

a. Land Availability: The amount of undeveloped land in Orange County, particularly in the unincorporated area, can provide unique opportunities to consider, address and initiate improved safety-sensitive planning through innovative land use planning and developments which promote maximum public protection.

b. Environmental Quality: Statutory requirements protecting environmental quality (e.g., NEPA, CEQA, Federal 208 Water Quality Standards) aid in the early identification and mitigation of safety-related impacts. Through the environmental documentation process appropriate mitigation measures or planning alternatives can be implemented to avoid or minimize future impacts.

2. Governmental/Fiscal Opportunities

a. Innovative Financing: Despite the loss of conventional funding sources, there exists the potential to expand existing financial resources and to identify and utilize new resources to supplement existing ones. These resources may include the increased use of the following: user fees; nonproperty-based taxes and miscellaneous revenues; developer financing for on-site and off-site improvements which promote safety; benefit assessment bonds; revenue bonds; and joint funding of safety improvements.

b. Federal and State Financing:

The mandate for improved safety-related planning, management and implementation is sometimes accompanied by Federal and State funds. Within the realm of hazardous materials planning, prioritized programs are being earmarked for funding. Under provision of AB 2948 (the Tanner Bill), the preparation of a hazardous waste management plan is reimbursable from the State. Elsewhere, the Federal government has established funds for the implementation of the Santa Ana River Main Stem Project in Orange County and neighboring counties.

c. Coordinated Planning Objectives and Standards: Orange County encourages long-range planning for the coordination of State and local government and private sector aims with the objective of phasing development in accordance with the consideration and provision of adequate safety measures. Orange County has taken a leadership role to promote safety-related programs, including hazardous waste management planning, hazardous materials disclosure, earthquake preparedness and flood control.

d. Disaster Coordination: The County of Orange recognizes the need for adequate disaster response planning. The opportunities and organizational structure exist to further coordinate emergency response to all natural disasters. The "Emergency Response Plan" of the County consists of both a detailed summary of the Countywide organization and a detailed description of the responsibility of each component agency in time of a disaster.

3. Economic and Market Opportunities

a. Hazardous Materials: The closure of Class I landfills and the increase in hazardous materials disposal restrictions is giving impetus to new technologies. Combined with requirements of AB 2948 (Tanner Bill) this may give added incentives to private industry to develop additional technologies for the treatment and disposal of hazardous materials.

CHAPTER FOUR: Public Safety Component

A. Overview

The Public Safety Component responds to State Government Code Section 65302 (g) which delineates the required contents of safety elements. Specifically, this component addresses locally relevant issues other than seismic and other geologic hazards which would impact upon the degree of safety of Orange County residents. Contained within the Public Safety component are goals, objectives and policies for the crime, fire, nuclear, hazardous waste and aircraft environment.

B. Goals and Objectives

Goal 1: Provide for a safe living and working environment consistent with available resources.

Objective 1: To identify Public Safety hazards and determine the relative threat to people and property in Orange County.

Goal 2: Minimize the effects of public safety hazards through implementation of appropriate regulations and standards which maximize protection of life and property.

Objective 2.1: To create and maintain plans and programs which mitigate the effects of Public Safety hazards.

Objective 2.2: To encourage the development and utilization of technologies which minimize the effects of Public Safety hazards.

Goal 3: Raise the awareness of Orange County residents, workers and visitors to the potential threat of Public Safety hazards.

Objective 3: To provide information, training and assistance to reduce loss of life and injury and to protect private and public property from public safety dangers.

C. Crime

1. Introduction

The discussion of crime in this component covers two important aspects of prevention: prevention of crime, which focuses on offenses, and prevention of criminality, which focuses upon the offenders.

Population growth in Orange County has increased concern over crime incidences and the timely and efficient investigation of criminal activity. The Orange County Sheriff-Coroner Department provides increasing police services to the unincorporated areas of Orange County and contracting cities. The purpose of the crime section of the Public Safety Component is to emphasize the importance of crime prevention in Orange County in order to maximize public safety. It clarifies current issues and concerns while setting forth direction, priorities, and management steps regarding crime prevention in Orange County.

2. Goals and Objectives

Goal: Public Safety goals and objectives may be found on page SAF-4-1. The objective below relates specifically to crime.

Objective: To maintain adequate levels of Sheriff patrol services through coordinated land use and facility planning efforts.

3. Policies

a. To determine those areas of investigation where land use regulation can most effectively reduce incidence of crime.

b. To provide coordination to all agencies within the County to assist in the prevention of crime.

c. To monitor and evaluate studies of crime prevention through land use and development standards to determine future regulations and programs.

d. To encourage development of programs and practices which incorporate crime prevention methods, techniques and experience into the planning process.

e. To continue to coordinate land use proposal reviews with the County Sheriff-Coroner Department to assure that Sheriff patrol services are adequately addressed.

f. To maintain mutual aid agreements with incorporated cities to assure efficient service delivery for the County Islands.

4. Implementation Programs

a. Public education/information

1) Action: Support the safety awareness efforts of the Sheriff/Coroner's Department and other agencies through public information and educational activities.

2) Discussion: This program is intended to increase the community's awareness of the need for crime prevention and provide educational assistance to residences and businesses.

3) New or Existing Program: Existing

4) Implementation Schedule: Ongoing

5) Responsible Agency: Sheriff/Coroner Department

6) Source of Funds: County General Fund

b. Neighborhood Watch

1) Action: The Neighborhood Watch Program prescribes three action to be taken by the Office of the Sheriff-Coroner:

   a) Citizens and their neighbors work in a program of mutual assistance.

   b) Encourage citizens/neighbors to participate in training in order to recognize and report suspicious activities in thei neighborhoods.

   c) Encourage citizens to also implement crime prevention techniques such as home security, Operation Identification, etc.

2) Discussion: Neighborhood Watch is an organization involving citizens and neighbors within a community. This prevention program enlists the support of these citizens by having them work with law enforcement to reduce crime in their communities.

3) New or Existing Program: Existing

4) Implementation Schedule: Ongoing

5) Responsible Agency: Orange County Sheriff-Coroner

6) Source of Funds: County General Fund

c. Sheriff's Reserve Bureau

1) Action: Sheriff's Reserve volunteers will continue to serve in seven specialized units which are organized to provide particular kinds of support for law enforcement activities.

2) Discussion: The Reserve Bureau consists of deputies who volunteer their time and experience to the Sheriff-Coroner Department as needed. Most reserve deputies are employed full-time in various civilian occupations and professions.

3) New or Existing Program: Existing

4) Implementation Schedule: Ongoing

5) Responsible Agency: Orange County Sheriff-Coroner

6) Source of Funds: County General Fund

D. Fire

1. Introduction

As described in Chapter Two, Fire Section, three major fire categories pose safety threats within Orange County: wildland, urban and wildland/urban interface. It is the Orange County Fire Department's (OCFD) responsibility to provide fire protection and paramedic services to the unincorporated County and contracting cities. The OCFD utilizes mutual aid and automatic aid agreements to improve fire protection services within County Islands and contracting cities. The State Department of Forestry also contracts with the OCFD for service in the suppression of wildland fires within the Cleveland National Forest.

This section of the Safety Element sets forth fire safety policies for Orange County and implementation programs to implement these policies.

2. Goals, Objectives and Policies

The following specific fire safety goal is in addition to the Public Safety goals and objectives found on page SAF-4-1.

a. Goal

Provide a safe living environment ensuring adequate fire protection facilities and resources to prevent and minimize the loss of life and property from structural and wildland, urban and wildland/urban fire damages.

b. Policies

1) To encourage periodic updating of fire hazard mapping and continue to analyze existing fire hazard data as it pertains to Orange County.

2) To establish improved development standards for location of new construction, structural design, emergency vehicular access and detection hardware.

3) To improve building code regulations to provide increased built-in fire protection.

4) To improve mutual aid and inter-agency automatic aid programs to maximize utilization of existing facilities.

5) To continue to improve the minimum water system design requirements for fire protection in wildland and remote areas.

6) To provide technical and policy information regarding structural and wildland fire hazards to developers, interested parties and the general public through all available media.

7) To increase public awareness through educational programs which promote fire safe practices and fire prevention.

8) To inform the public of Fire Department emergency services with special emphasis on prompt notification.

9) To encourage improvement of fire defense systems in hazardous areas.

10) To encourage the continued training of police officers and firefighters in arson detection to expand capabilities of the agencies in their detection and investigation of incendiary fires.

11) To maintain fire hazard information in the County's Buyer Notification Program.

12) To plan for the lowest fire insurance rating based on fiscal considerations and physical limitations (e.g., topography, response time.)

13) To improve emergency response times for emergency responders through the use of computer-aided dispatch system and "preempt traffic signal control" system.

14) To promote increased volunteerism in the various fire protection fields (e.g., education, paid call firefighters and support services).

15) To incorporate helicopter support facilities in the planning of fire service facilities as a means to improve medical, disaster and fire services.

3. Implementation Programs

The implementation programs discussed below implement the County's fire policies and promote fire safe practices and strategies.

a. Public Education/Information

1) Action: Support the fire safety awareness efforts of the Orange County Fire Department and other agencies through public information and educational activities.

2) Discussion: The Orange County Fire Department conducts programs and provides information and assistance to promote public awareness concerning fire hazards and fire safe practices.

3) New or Existing Program: Existing

4) Implementation Schedule: Ongoing

5) Responsible Agency: Orange County Fire Department

6) Source of Funds: County General Fund

b. Site Design Review

1) Action: Review and impose conditions of approval of the appropriate project development level to assure that adequate site design fire safe construction materials and fire detection and protection devices are incorporated into the proposal in order to achieve maximum fire protection and to minimize extent of loss associated with fire incidence.

2) Discussion: The Orange County Fire Department reviews all land use proposals including subdivisions and site development permits for adequate site design and implementation.

3) New or Existing Program: Existing

4) Implementation Schedule: Ongoing

5) Responsible Agency: County Fire Department

6) Source of Funds: Structural Fire Fund

c. Comprehensive Fire Master Plan

1) Action: Develop further and update, as necessary, elements of a Comprehensive Fire Master Plan to address short-range and long-range fire safety measures.

2) Discussion: In compliance with National Fire Academy guidelines, a comprehensive fire master plan provides detailed information concerning future Fire Department needs as well as information pertaining to current operation levels. The plan contains information, detailing population growth areas, future fire station sites, emergency response times statistics, available fire fighting water sources and supplies, fire personnel training and automation and other fire service improvements which promote fire safety in Orange County.

3) New or Existing Program: Expand existing program.

4) Responsible Agencies: a) County Fire Department
b) EMA

5) Source of Funds: a) Structural Fire Fund
b) County General Fund

d. Hazardous Materials Disclosure Ordinance

1) Action: Continue to encourage the enforcement of the provisions of disclosure ordinances adopted by cities contracting services with the Orange County Fire Department. Promotion of the adoption of such ordinances by the remainder of the County's cities will also be encouraged.

2) Discussion: In the wake of the 1985 Fricker Chemical fire, Orange County enacted the Hazardous Material Disclosure Ordinance, requiring companies to disclose the hazardous materials they handle so that firefighters will know what confronts them in the event of an emergency. Implementation of the ordinance will include maintenance of relevant data on a Fire Department computer system.

3) New or Existing Program: Existing

4) Implementation Schedule: Ongoing, upon adoption of ordinances

5) Responsible Agency: Orange County Fire Department

6) Source of Funds: Fees paid by persons reporting the presence of hazardous materials. Fees are based upon the number and quantities of materials reported.

E. Hazardous Materials

Hazardous materials management has emerged over the past decade as an important environmental issue. Society's advanced technological culture and high standard of living have led to dependence on products containing hazardous substances. There has been an increase in the use of these substances in manufacturing and the provision of daily essentials such as electricity. The need for use of hazardous materials and the generation of hazardous waste will not diminish, but rather increase along with the need for adequate management of such materials and waste within the County.

The policies of this section of the Public Safety Component focus on potential hazards from the broad area of hazardous materials. Topics discussed in this area include hazardous materials, hazardous waste, infectious wastes, radioactive material and nuclear material. Permitting and siting issues are important aspects of hazardous material management and will be referenced in the Land Use, Resources, and Public Services and Facilities elements on an as need basis. The purpose of this section is to set forth a comprehensive and integrated strategy for future hazardous material management planning and to ensure a point of coordination of County policy with existing and developing hazardous material management plans.

1. Goals, Objectives and General Policies

General goals and objectives may be found on page SAF-4-1.

a. To provide consultation, assistance, and education to the public, industries, and other agencies regarding the applicable laws and regulations of hazardous materials (including underground storage tanks), hazardous waste, infectious waste, radioactive materials and nuclear materials.

b. To respond to all emergency incidents to oversee and ensure that these incidents involving hazardous waste, infectious waste, and radioactive materials are properly mitigated.

c. To investigate all complaints involving hazardous waste, infectious waste and radioactive materials, and take enforcement action as needed.

d. To inspect, evaluate, and maintain an adequate surveillance of hazardous materials, hazardous waste, infectious waste and radioactive materials in order to ensure full compliance with the laws and regulations.

e. To secure and maintain complete and accurate information on the identity, volume, location and management methods of all hazardous materials, hazardous waste, infectious waste and radioactive materials in Orange County. This will aid in management planning and emergency response.

f. To implement and administer all mandated laws, regulations and ordinances relating to hazardous materials, hazardous waste, infectious waste and radioactive materials.

g. To create and/or support legislation which reduces the various levels of risk posed by hazardous materials, hazardous waste, infectious waste, and radioactive materials to the public and to industries and businesses.

h. To provide training to designated personnel to keep them up-to-date, regarding new equipment and technology, on the reduction of risks of hazardous materials (including those stored in underground storage tanks), hazardous waste, infectious waste and radioactive materials.

i. To implement the Orange County Emergency Plan particularly sections addressing hazardous waste, infectious waste, radioactive materials and nuclear materials incidences. This will help to foster participation in countywide planning efforts.

2. Hazardous Materials

a. Introduction

As described in Chapter Two, Public Safety section, discussion of hazardous materials management has just recently begun to emerge in light of potential threat to public safety. Exposure to hazardous materials can cause chronic health effects leading to poisoning and possible death. The need for comprehensive hazardous material management is clear, and solutions and responsibilities for the many complex issues inherent in hazardous material management are evolving.

The policies of this section of the Public Safety Component focus on potential hazards from hazardous materials. In view of planning needs, it is the purpose of this section to set out strategies addressing both agency and project specific concerns.

b. Policies

The following specific hazardous material policy is in addition to the general hazardous materials policies found on page SAF-4-11.

1) Conduct plan checks of all new and existing underground storage tank installations to assure compliance with construction and monitoring standards.

c. Implementation Programs

1) Hazardous Material Disclosure Ordinance and AB 2185

a) Action: Continue to encourage the enforcement of the provisions of disclosure ordinances adopted by cities contracting services with the Orange County Fire Department. Promotion of the adoption of such ordinances by the remainder of the County's cities will also be encouraged.

b) Discussion: On November 5, 1985, the Board of Supervisors adopted an ordinance relating to hazardous materials disclosure /(Orange County Code, title 4, Division 3, Article 4). It requires that businesses using or handling a minimum of 500 pounds or 55 gallons of hazardous material must provide disclosure information to the Orange County Fire Department. Businesses will be required to file biannually and within 15 days of any significant changes. Once accumulated, data is accessible to various emergency response personnel to handle hazardous material incidents in the most expedient and appropriate manner. Additionally, disclosure information will identify facilities handling hazardous material so that potential problem areas can be pinpointed.

Under AB 2185 (California Health and Safety Code, Section 25500 et. seq.), any business that handles hazardous material is required to submit a business emergency plan, which will be approved and maintained by Orange County Fire Department. The business plans also serve as a tool for the expedient and appropriate handling of local hazardous material incidents.

c) New or Existing Program: Existing

d) Implementation Schedule: Ongoing, upon adoption of ordinances

e) Responsible Agency: Orange County Fire Department

f) Source of Funds: Fees are paid by persons reporting the presence of hazardous materials. Fees are based upon the number and quantities of materials reported.

2. Underground Storage Tank Program

a) Action: Continue to implement the Underground Storage Tank Program.

b) Discussion: The purpose of the Underground Storage Tank (UST) Program is to protect public health and the environment from potential sources of contamination of the groundwater by regulating underground storage tanks containing hazardous materials.

c) New or Existing Program: Existing

d) Implementation Schedule: Ongoing

e) Responsible Agency: Orange County Health Care Agency

f) Source of Funds: Completely funded by fees collected from the UST owners.

3. Hazardous Waste

a. Introduction

As described in Chapter Two, Public Safety Section, hazardous wastes are by-products from the increased usage of hazardous material in the manufacture of products important to our personal and economic needs. Hazardous wastes will continue to cause great public concern as the effects of hazardous waste continue to damage the environment and injure personal health.

The policies of this section of the Public Safety Component focus on potential hazards from hazardous wastes. In view of planning needs, it is the purpose of this section to set out strategies addressing both agency and project specific concerns.

b. Policies

The following specific hazardous waste policies are in addition to general hazardous materials policies found on page SAF-4-11.

1) To support regional efforts as needed to plan for and facilitate the establishment of regional treatment facilities to manage the hazardous, infectious and radioactive wastes which are generated within this county.

2) To make available to the public and news media information on hazardous waste discharges likely to cause substantial injury to public health or safety.

3) To implement the Tanner Process for Hazardous Waste Management planning.

c. Implementation Programs

1) Public Education/Information

a) Action: Support the efforts of the Fire Department's Hazardous Materials Program Office (HMPO) and other agencies through public information and educational activities.

b) Discussion: This program is intended to increase the community's awareness of the need for proper disposal of hazardous waste and provide educational assistance to residences and businesses.

c) New or Existing Program: Existing

d) Implementation Schedule: Ongoing

e) Responsible Agency: Fire Department/HMPO

f) Source of Funds: (1) County General Fund
(2) Hazardous Waste Generator Fees

2) Household Hazardous Waste Collection Program

a) Action: Continue to promote the efforts of the County Hazardous Materials Program Office (HMPO) in organizing collection of household toxic wastes on a regular basis.

b) Discussion: This effort is aimed at securing the proper disposal of household chemicals considered dangerous to the environment, particularly ground water supplies. The first phase consisted of a series of one-day events called Toxic Roundups at which residents disposed of unwanted household toxics. As an ongoing program, 4-5 collection stations will be established throughout the county for the collection of household and small quantity generator wastes. A joint venture of the County, cities and solid waste haulers, each collection station will offer Saturday collection hours 4-5 times a year.

c) New or Existing Program: New

d) Implementation Schedule: Ongoing; Second phase to commence upon establishment of collection stations; targeted for October 1987.

e) Responsible Agency: HMPO

f) Source of Funds: (1) Fees from the Waste Management Enterprise Fund
(2) Orange County Sanitation District
(3) User Fees

3) Hazardous Materials Management Coordination

a) Action: Continue to promote the efforts of the Hazardous Materials Program Office (HMPO) in reviewing the County's hazardous materials activities and in making recommendations to ensure effective coordination and control of countywide resources.

b) Discussion: In furthering the efforts to adequately and effectively manage the hazardous materials/waste stream in Orange County, the Hazardous Materials Program Office (HMPO) of the Orange County Fire Department facilitates the coordination of various parts of the County's hazardous materials program both within the county and with outside organizations. This organization is accomplished through the following:

- o Explanation and interpretation of policies and priorities established by the State and the County;
- o Establishment and direction of both ongoing and ad hoc committees of working level staff from many agencies to address specific issues or procedures;
- o Facilitating the exchange or sharing of information, concerns and priorities between staff of different agencies;
- o Establishing and maintaining regular contact and involvement with regional, State and Federal agencies and officials involved in hazardous materials issues.

c) New or Existing Program: Existing

d) Implementation Schedule: Ongoing

e) Responsible Agency: HMPO

f) Source of Funds: (1) County General Fund
(2) Hazardous Waste Generator Fees

4) Buyer Notification Program

a) Action: Continue the administration of the Buyer Notification Program as designated by Board of Supervisors Resolution 82-1368. Land use maps and planning information required by the guidelines shall be updated yearly by the subdivider/developer, or more often, if the Director of Planning/EMA is aware of planning changes which affect the subdivision and makes the update a condition of his approval of the map.

b) Discussion: The Buyer Notification Program is intended to provide prospective home buyers with an appropriate overview of nearby planning and development. Information provided in the distributed packets includes the location of such facilities as fire stations and critical utility facilities.

c) New or Existing Program: Existing

d) Implementation Schedule: Ongoing

e) Responsible Agency: EMA

f) Source of Funds: County General Fund

5) Hazardous Waste Program

a) Action: Continue to implement the Waste Management Program. The program includes the Hazardous Waste Generator Program, the Emergency Response Program and the Underground Storage Tank Program.

b) Discussion: The purpose of the Hazardous Waste Program is to protect the public and the environment from exposure to hazardous waste and hazardous materials stored in underground storage tanks. Maximization of protection is accomplished through surveillance and enforcement of hazardous waste generators.

c) New or Existing: Existing

d) Implementation Schedule: Ongoing

e) Responsible Agency: Orange County Health Care Agency

f) Source of Funds: Completely funded by fees collected from the generators of hazardous waste.

6) Proposition 65 Compliance Program

a) Action: Continue to implement the Proposition 65 Compliance Program.

b) Discussion: This program is to inform the public of illegal or threatened illegal discharges of hazardous waste that are likely to cause substantial injury to public health or safety.

c) New or Existing: Existing

d) Implementation Schedule: Ongoing

e) Responsible Agency: Orange County Health Care Agency

f) Source of Funds: Completely funded by fees collected from the generators of hazardous waste and by fees collected from the UST owners.

4. Infectious Wastes

a. Introduction

As described in Chapter Two, Public Safety Section, infectious wastes are wastes which potentially carry communicable pathogenic organisms. Though not as celebrated as other type of hazardous waste, infectious wastes also pose a potential public health and safety risk, therefore warranting careful management.

The policies of this section of the Public Safety Component focus on potential hazards from infectious wastes. In view of planning needs, it is the purpose of this section to set out strategies addressing both agency and project specific concerns.

b. Policies

General hazardous materials policies may be found on page SAF-4-11.

c. Implementation Programs

1) Infectious Waste Program

a) Action: Continue to implement the Infectious Waste Program.

b) Discussion: The purpose of the Infectious Waste Program is to protect the public health by detecting and reducing the incidents of illegal storage and disposal of infectious waste.

c) New or Existing: Existing

d) Implementation Schedule: Ongoing

e) Responsible Agency: Orange County Health Care Agency

f) Source of Funds: Completely funded by fees collected from the generators of infectious wastes.

5. Radioactive Material

a. Introduction

As described in Chapter Two, Public Safety Section, radioactive materials pose a threat to public safety due to potential accidental release of these materials. Radiation can affect body cells and, in excessive amounts, contribute to or cause an increase in mortality, and an increase in serious illness.

The policies of this section of the Public Safety Component focus on potential hazards from radioactive material. In view of planning needs, it is the purpose of this section to set out strategies addressing both agency and project specific concerns.

b. Policies

The following specific radioactive material policies are in addition to general Hazardous Materials policies found on page SAF-4-11.

1) To encourage development of emergency evacuation procedures for areas immediately surrounding facilities storing, handling or processing radioactive material.

2) Evaluate new equipment and technology used in the handling, storage, transport and disposal of radioactive materials.

c. Implementation Programs

1) Radioactive Materials Program

a) Action: Continue to implement the Radioactive Materials Program.

b) Discussion: The purpose of the Radioactive Material Program is to protect public health and the environment from potential sources of contamination and exposure from radioactive materials. Maximization of protection is accomplished through inspection of radioactive materials users.

c) New or Existing: Existing

d) Implementation Schedule: Ongoing

e) Responsible Agency: Orange County Health Care Agency

f) Source of Funds: Funded through contract with the State which collects fees from the users of radioactive materials. This program is also reimbursed by the State Nuclear Power Plan Fund created by SB 1473 for any activities related to the operation of San Onofre Nuclear Generating Station.

6. Nuclear Materials (San Onofre Nuclear Generating Station - SONGS)

a. Introduction

The Federal government mandates licensees of nuclear power plants to arrange through local governmental jurisdictions a level of emergency planning that will provide for the implementation of public protective actions in the event of an accident that could involve the extraordinary release of radioactivity.

The subsections which follow address, in particular, planning policies and the programs currently in place to implement those policies to ensure the safety of the public. It should be noted that these programs contemplate coordinated roles between the utility and the affected local governments including the County of Orange.

b. Policies

The following specific nuclear materials policies are in addition to general hazardous materials policies found on page SAF-4-11.

1) To cooperate in providing coordinated emergency plans specific to the San Onofre Nuclear Generating Station.

2) To participate in mechanisms for coordinated emergency planning and response among the utility and other governmental jurisdictions.

3) To participate in and provide training to Orange County emergency responders and decision-makers to ensure ongoing proficiency in managing all aspects of a nuclear power plant emergency.

4) To encourage and participate in public education in advance of need with respect to notification of a nuclear power plant emergency and proper public protective actions.

c. Implementation Programs

1) Emergency Plans

a) Action: Continue to evaluate Orange County's Incident Response Plan for the San Onofre Nuclear Generating Station (SONGS) and update annually, as appropriate.

b) Discussion: Southern California Edison and each primary response agency, including the County of Orange, is responsible for the preparation of its own emergency plans concerning a nuclear power plant accident. Orange County's Incident Response Plan for SONGS is updated regularly and must be coordinated with the plans of other jurisdictions with which there are common responsibilities. Inter-jurisdictional procedures have evolved to cover these responsibilities.

Because the possible danger to the public resulting from an accident at SONGS diminishes significantly as the distance from the plant increases, the level of planning and possible response actions is highest in the 10-mile Emergency Planning Zone surrounding the plant site and also varies with the severity of an accident.

Emergency Planning Zone (EPZ): The federal government has established an area with an approximate 10-mile radius around every nuclear generating station as an Emergency Planning Zone (EPZ). At SONGS, the EPZ encompasses portions of Orange and San Diego counties; the entire cities and communities of San Clemente, San Juan Capistrano and Dana Point; portions of the Camp Pendleton Marine Corps Base; and several beaches and parks operated by the State Department of Parks and Recreation (San Onofre State Beach, San Clemente State Beach and Doheny State Beach).

Public Education Zone (PEZ): The State of California Office of Emergency Services has defined an area outside of and adjacent to the federal Emergency Planning Zone as the Public Education Zone (PEZ). At SONGS, the PEZ encompasses the communities of Laguna Beach, South Laguna, Laguna Hills, Laguna Niguel, El Toro and Mission Viejo in Orange County; portions of the Cleveland National Forest in Riverside and San Diego counties; additional portions of Camp Pendleton Marine Corps Base; and the communities of Oceanside, Fallbrook, Bonsall, Carlsbad and Vista in San Diego County.

Emergency Classifications: An emergency is a problem or potential problem at the plant that could eventually affect public safety. Emergency conditions are classified into four categories by the federal government (standard for all nuclear power plants in the nation) according to the severity of possible accidents. They are as follows:

(1) Unusual Event: Abnormal plant condition which by themselves do not constitute significant emergency condition nor any hazard to the public.

(2) Alert: Events that involve actual or potential deterioration of plant safety. There is potential damage to one of three safety barriers. Local government officials are notified and response facilities are activated.

(3) Site Area Emergency: Events involving actual or probable major failures of plant functions needed to protect the public. Local public agencies would prepare for the possibility of a more serious situation. Regular news briefings are held with the news media.

(4) General Emergency: Events which would involve an actual or imminent release of large amounts of radioactive material to the environment outside the plant boundary. Utility experts, regulatory agencies and local officials determine if public protective actions are necessary.

Protective Action Guidelines are set very conservatively by the federal government. Additionally, the utility is required to notify the primary response agencies within the EPZ of any of the four categories of events within 15 minutes of the declaration of the event. This combination is intended to provide early mobilization of appropriate resources and lead time for making assessments and carrying out public protective actions, if any are required. Emergency protective actions which the public in the Emergency Planning Zone may be asked to take by the local governing officials include sheltering and, only in very extreme emergencies, evacuation. On the other hand, in the unlikely event of an extreme nuclear power plant emergency, sheltering may be the only protective action those in the Public Education Zone could be asked to take by local governing officials.

c) New or Existing: Existing

d) Implementation Schedule: Ongoing

e) Responsible Agency: OCFD/Emergency Management Division

f) Source of Funds: Reimburseable from utility-funded account administered by State Office of Emergency Services.

2) Interjurisdictional Planning Committee (IPC)

a) Action: Participate in the deliberations of the Interjurisdictional Planning Committee and encourage cooperative planning, decision-making, and response actions among all participating agencies.

b) Discussion: The primary response agencies and jurisdictions include Southern California Edison Company, Orange and San Diego counties, San Clemente, San Juan Capistrano, Camp Pendleton Marine Corps Base, and the local office of the State Parks and Recreation Department. Other participating agencies are the American Red Cross and the California Highway Patrol.

While local governments and agencies surrounding SONGS do not have authority to regulate plant operations, they do have responsibilities for protecting the public health and safety of their constituents should there be an extraordinary release of radioactivity.

Accordingly, the IPC meets regularly to coordinate their emergency plans, train, exercise and resolve matters of mutual concern.

c) New or Existing: Existing

d) Implementation Schedule: Ongoing

e) Responsible Agency: OCFD/Emergency Management Division

f) Source of Funds: Reimburseable from utility-funded account administered by State Office of Emergency Services.

3) Training

a) Action: Provide training to emergency responders and others responsible for making decisions that affect appropriate public protective actions and participate in joint exercises of nuclear power plant emergency plans.

b) Discussion: In any emergency situation, the utility only has the authority to advise local governments of plant status and to make recommendations. Overall coordination is facilitated by agency representatives at the joint Emergency Operations Facility, the Emergency News Center, and a dedicated decision-making communications network. These facilities are exercised regularly by the local jurisdictions and agencies who are evaluated periodically by the Federal Emergency Management Agency.

Significant local training activities include:

(1) Periodic Drills: Simulated drills to test specific components of the emergency plans;

(2) Regular Exercises: Full-scale exercises of both on-site and off-site emergency plans at least every two years, and more frequently if required. On-site performance is evaluated by the Nuclear Regulatory Commission and off-site response is monitored and evaluated by the Federal Emergency Management Agency; and,

(3) Community Alert Siren/Emergency Broadcast Systems Test: Annual full-scale activation of the Community Alert Siren System together with activation of the Emergency Broadcast System.

c) New or Existing: Existing

d) Implementation Schedule: Ongoing

e) Responsible Agency: OCFD/Emergency Management Division

f) Source of Funds: Reimburseable from utility-funded account administered by State Office of Emergency Services.

4) Public Education

a) Action: Provide information materials upon request and participate in nuclear power plant emergency education forums with Southern California Edison and other primary response jurisdictions as appropriate.

b) Discussion: Responding appropriately in an emergency depends not only on cooperation of the primary responders, but on an informed public. Accordingly, public education is required by federal regulators for the 10-mile emergency Planning Zone (EPZ) surrounding SONGS, and by State regulators for the Public Education Zone (PEZ) surrounding the EPZ.

Education Resources: Within the Emergency Planning Zone an Emergency Information Booklet is mailed by Southern California Edison to every residential and business address within the EPZ containing information on radiological emergencies. The same information is sent to every new utility customer in the EPZ. Other resources include a Speakers' Bureau, school programs, tours, telephone directory instructions, beach posters and hotel and motel placards.

Within the Public Education Zone (PEZ) every residential and business address in the Public Education Zone is periodically mailed an Emergency Information Handbook. The handbook provides information about the emergency plans, agencies involved, the nature of radiation and the effectiveness of sheltering should public protective action ever be required. The handbook is also mailed to new customers within the PEZ on a regular basis.

c) New or Existing: Existing

d) Implementation Schedule: Ongoing

e) Responsible Agency: Southern California Edison Company and, where appropriate, OCFD/Emergency Management Division.

f) Source of Funds: Reimburseable from utility-funded account administered by State Office of Emergency Services.

G. Aircraft Environment

1. Overview

As discussed in Chapter Two "Aircraft Environmental," Orange County is unique among California counties because commercial, general and military aviation installations are located within its boundaries. Air traffic generated by these facilities, coupled with air traffic transiting through the county, presents an image of crowded skies heightening the chances of aircraft accidents. However, accidents occur infrequently compared to the number of operations.

This section of the Safety Element presents a specific aircraft safety goal and policies intended to minimize existing aircraft hazards and promote aviation safety.

2. Goals, Objectives and Policies

The following specific goal is in addition to the Public Safety goals and objectives found on page SAF-4-1.

a. Goal: To protect the health, safety, and general welfare by ensuring the orderly expansion of airports and the adoption of measures that minimize the public's exposure to safety hazards within areas around airports.

b. Policies

1) To utilize the most recent adopted Air Installations Compatible Use Zone (AICUZ) studies for military air installations (i.e., MCAS, El Toro, MCAS, Tustin and Los Alamitos Army Airfield) as the basis for safety compatibility planning in the vicinity of each facility.

2) To refer projects, as required by Section 21676 of the Public Utilities Code, to the Airport Land Use Commission for Orange County prior to their adoption or approval to determine consistency of the projects with the Airport Environs Land Use Plan (AELUP).

3) To support the creation of regulations requiring aircraft detection equipment.

4) To encourage the creation and updating of detailed flight charts and publications for the airspace in Orange County.

5) To encourage cooperative agreements between the County and the air installations to provide relief services in times of natural disaster.

3. Implementation Programs

The following section identifies existing programs which promote aviation safety and enhance public awareness.

a. Public Information and Community Liaison

1) Action: Support expanded public information and community liaison services as a means to public awareness.

2) Discussion: This program promotes community awareness of aviation operations and safety. As an example, open houses held annually by the three military air installations (MCAS, El Toro, MCAS, Tustin and Los Alamitos Army Airfield) enhance community liaison. Public information and public involvement in the planning and operation of the County air installation is also promoted through the Airport Land Use Commission, Airport Commission and liaison services to local jurisdictions' councils.

3) New or Existing Program: Existing

4) Implementation Schedule: Ongoing, expand as necessary

5) Responsible Agencies:
   a) John Wayne Airport/Airport Commission
   b) Department of Defense
   c) Airport Land Use Commission
   d) Federal Aviation Administration

6) Source of Funds:
   a) Federal Government
   b) County General Fund
   c) Airport Funds

b. Air Installations Compatible Use Zones (AICUZ) Program

1) Action: Continue to utilize and maintain the AICUZ to ensure compatible development in airport areas and to minimize public exposure to potential safety hazards associated with aircraft operations.

2) Discussion: This program addresses compatibility problems arising between military air installation flight operations and urban development. The program strives to maintain the mission of an air installation and to protect surrounding communities from potential aircraft hazards.

3) New or Existing Programs: Existing

4) Implementation Schedule: Ongoing

5) Responsible Agency: Department of Defense

6) Sources of Funds: a) Department of Defense
b) County General Fund

c. Buyer Notification Program

1) Action: Continue the administration of the Buyer Notification Program as designated by the Board of Supervisors Resolution 82-1368. Land use maps and planning information required by the guidelines shall be updated yearly by the subdivider/developer or, more often, if the Director of Planning/EMA is aware of planning changes which affect the subdivision and make the update a condition of his approval of the map.

2) Discussion: The Buyer Notification Program provides prospective home buyers and businesses with an overview of nearby planning and development. Information provided includes public facilities, demographics, and land use data, including the location of air installations.

3) New or Existing Program: Existing

4) Implementation Schedule: Ongoing

5) Responsible Agency: EMA

6) Source of Funds: County General Funds

d. Airport Environs Land Use Plan (AELUP)

1) Action: To continue to refer projects as deferred by Section 21676 of the Public Utilities Code and within the planning areas of the Airport Land Use Commission to the commission to determine consistency with the Airport Environs Land Use Plan.

2) Discussion: This program aims to safeguard the general welfare of inhabitants within the vicinities of airports and to ensure the continued compatible operation of existing and future airports including heliports and helipads within Orange County. The plan seeks to ensure that urban development and air installation facilities are not concentrated in areas susceptible to potential aircraft hazards and to guard against structures or activities that adversely affect navigable airspace.

3) New or Existing Program: Existing

4) Implementation Schedule: Ongoing

5) Responsible Agency: Airport Land Use Commission

6) Source of Funds: a) John Wayne Airport
b) County

CHAPTER FIVE: Natural Hazards Component

A. Overview

This component contains goals and policies and provides implementation programs to reduce the threat of natural hazards. The natural hazards discussed in this component are related to Orange County's geography, geology and climate. The component is divided into two major topics, Flood Hazards and Seismic and Geologic Hazards.

B. Goals and Objectives

The following goals and objectives relate to the broader natural hazards topic from which are derived the policies described in the Flood Hazards and Seismic and Geologic Hazards sections.

Goal 1: Provide for a safe living and working environment consistent with available resources.

Objective 1: To identify natural hazards and determine the relative threat to people and property in Orange County.

Goal 2: Minimize the effects of natural safety hazards through implementation of appropriate regulations and standards which maximize protection of life and property.

Objective 2.1: To create and maintain plans and programs which mitigate the effects of natural hazards.

Objective 2.2: To support the development and utilization of technologies which minimize the effects of natural hazards.

Goal 3: Raise the awareness of Orange County residents, workers and visitors to the potential threat of natural hazards.

Objective 3: To provide information, training and assistance to reduce loss of life and to protect private and public property from environmental hazards.

C. Flood Hazards

1. Introduction

As described in Chapter Two, Flood Hazards Section, flood and dam inundation pose potential threats to life and property in a large portion of Orange County. In response to the threat, federal, state and regional/local plans and programs have been prepared to minimize the threat of flooding.

The Flood Component seeks to maximize protection and minimize damage from future potential flood hazards. This component outlines goals, objectives and policies that operate in conjunction with the broader environmental hazards goals and objectives to establish an implementation program framework to address flood hazards and diminish threat of life and property losses attributed to flooding.

2. Goals, Objectives and Policies

The goals and objectives of this section support the goals and objectives of the Flood Control System Component of the Public Services and Facilities Element. They are in addition to the general environmental hazards goals and objectives described on SAF-5-1. Together, this component and the Flood Control System Component provide a strategy for addressing and mitigating potential flood hazards.

a. Goals and Objectives

Goal: Provide effective and efficient flood protection throughout Orange County.

Objective 1: To implement the improvements for the Santa Ana River Main Stem Federal Project.

Objective 2: To develop and enhance intergovernmental relations for flood protection programs in Orange County.

Objective 3: To implement flood control facilities which protect both existing and proposed development.

b. Policies

1) To phase improvements to Flood Control District facilities consistent with funding capabilities: (1) implement them within the time frame of the Santa Ana River Main Stem Federal Project for equivalent capacities; (2) provide as a goal 100-year flood protection for residences and other non-floodproof structures; and (3) complete links in the system that have not been provided by new development.

2) To encourage and promote coordination between regional/local flood control agencies and the State/Federal agencies for optimum flood prevention programs and protection devices.

3) To regulate development of major watercourses and floodplains through application of appropriate land use measures.

4) To identify areas subject to inundation due to base flood runoff.

5) To identify areas subject to inundation due to dam failure.

6) To limit erosion and sediment transport from development areas to bays and harbors.

7) To permit reasonable movement of sediment to the open ocean for beach sand replenishment through remedial measures.

8) To provide technical and policy information regarding flood hazards to developers, interested parties, and the general public.

9) To disseminate information regarding hazards and mitigating measures through all available media.

10) To monitor and evaluate studies of the use of non-structural alternatives, including more compatible land use planning adjacent to watercourses, for flood control purposes.

11) To provide guidance during and after flood disaster and promote interagency agency assistance for persons affected.

12) To create design criteria which minimizes or mitigates impacts associated with crossing of flood plains by development.

13) To appropriate funds for the Santa Ana River Main Stem Federal Project and expedite construction.

3. Implementation Programs

The following programs are designed and intended to advance Orange County's flood protection. The intergovernmental coordination, All-River Plan, and Local Drainage Basins and Orange County Flood Control District System programs support the implementation programs of the Public Services and Facilities Element.

a. Intergovernmental Coordination

1) Action: Continue to develop intergovernmental relations toward achieving flood protection goals and objectives.

2) Discussion: The Orange County Flood Control District (OCFCD) currently cooperates with various levels of government including federal, state and local agencies. For instance, local projects are analyzed and prioritized by various agencies for budget and implementation purposes requiring effective agency coordination. In addition, the primary regional project, the Santa Ana River Main Stem Federal Project which received Congressional approval, is dependent upon OCFCD coordination with the U.S. Army Corps of Engineers for project development and implementation and local funding. Cooperation among affected counties (Riverside, San Bernardino and Orange Counties) will also be important for project phasing and implementation. Continued and expanded cooperation among agencies will provide a coordinated effort toward achieving flood protection funding, phasing and implementation goals and objectives.

3) New or Existing Program: Existing

4) Implementation Schedule: Ongoing

5) Responsible Agency: EMA

6) Source of Funds: Various Funding Sources

b. Coastal Flood Plain Development

1) Action: Utilize the Coastal Flood Plain Development Study to evaluate projects in areas prone to coastal flooding and update the report as often as warranted.

2) Discussion: The Coastal Flood Plain Development Study, approved in 1985, addressed Orange County's requirement for technical criteria and standards for the review of structures and protective devices on coastal property designed to mitigate and minimize coastal flooding.

The report serves as a working base to be expanded and improved upon through periodic updating, new coastal data and new methods to analyze coastal flooding.

3) New or Existing program: Existing, expand and update as appropriate.

4) Implementation Schedule: Ongoing

5) Responsibile Agencies: EMA

6) Scource of Funds: County General Fund

c. Santa Ana River Main Stem Federal Project (previously the All-River Plan)

1) Action: Expedite to the greatest extent feasible the implementation of the Santa Ana River Main Stem Federal Project as an integral flood control management program.

2) Discussion: The Santa Ana River Main Stem Federal Project is a comprehensive flood control program focusing on improvements along the Santa Ana River beginning at its headwaters in San Bernardino County to its ocean mouth in Orange County. The Santa Ana River Main Stem Federal Project was approved by the federal government in 1980 and funding authorized in 1986. Features of the plan include construction of the Seven Oaks Dam in San Bernardino County; improvement to Prado Dam in Riverside County; and channel improvements to the river and Santiago Creek in Orange County. Construction of a separable element of the project could begin as early as 1989.

3) New or Existing Program: Existing

4) Implementation Schedule: Ongoing

5) Responsible Agencies: (a) U.S. Army Corps of Engineers
(b) Orange County Flood Control District

6) Source of Funds: Various Funding Sources

d. Orange County Flood Control District System

1) Action: Continue to provide efficient and effective flood control protection for Orange County residents.

2) Discussion: The Orange County Flood Control District is empowered to construct and maintain flood control works for water conservation and to prevent or minimize loss of life and property caused by flooding. The Environmental Management Agency (EMA) is responsible for implementing the Flood Control District's program which includes the design, construction, operation and maintenance of regional flood control facilities.

3) New or Existing Program: Existing

4) Implementation Schedule: Ongoing

5) Responsible Agencies: (1) O.C. Flood Control District
(2) EMA

6) Source of Funds: Various Funding Sources

D. Seismic Safety and Geologic Hazards

1. Introduction

Two fault zones located within Orange County are believed to be potentially hazardous: the Newport-Inglewood Fault and the Whittier Fault. These faults are capable of producing 7.5 and 7.0 earthquakes respectively. Earthquakes of such magnitudes, due to their locations and the degree of urbanization, represent a considerable risk of structural damage and loss of life.

In addition, Orange County residents are exposed to other geologic hazards not necessarily associated with earthquakes: landsliding, downward movement of earth and rock materials; subsidence and uplift, a vertical mass movement of earth; erosion, including beach erosion; and potentially dangerous soil characteristics (expansive, peat, sulfate gaseous, and corrosive soils and soils subject to hydroconsolidation).

This component provides a basis for programs which serve to implement natural hazards related safety goals and objectives, seismic and geologic safety policies, and to establish a framework for additional inventory and residence planning efforts. This component also serves to ensure that an adequate level of measures is implemented to minimize the loss of life and property due to seismic and non-seismic hazards in Orange County.

2. Goals and Objectives

Natural Hazards goals and objectives may be found on page SAF-5-1.

3. Policies

a. To provide emergency planners with ongoing and up-to-date information about private utilities' emergency planning to accommodate and maintain resource sharing between the public and private sector.

b. To continue the development and implementation of earthquake mitigation, preparedness, response and recovery through the Orange County/Southern California Earthquake Preparedness Project process.

c. To promote public awareness and preparedness in the area of seismic safety in Orange County.

d. To implement ordinances, regulations and procedures which mandate the review, evaluation and restriction of land use due to possible undue geologic threat.

e. To encourage establishment (through the Orange County/Southern California Earthquake Preparedness Project process and other resources) of seismic design criteria and standards for county facilities (e.g., transmission lines, water and sewage systems, and highways), any structures housing necessary mobile units and support

equipment, and other vital resources which would be needed following an earthquake (e.g., "back-up" power generation facilities and water storage).

f. To periodically update maps of existing faults, slide areas, and other geographically unstable areas in and around Orange County.

g. To monitor, evaluate, and analyze existing seismic and geological data as it pertains to Orange County to determine future regulations and programs.

h. To establish development standards for land use, new construction and proposed improvements to ensure proper design and location of structures.

i. To provide coordination to all agencies within the county to assist in the mitigation of geologic and seismic hazards and to educate those agencies in preparedness, response and recovery from a major earthquake.

j. To provide technical and policy information regarding geological and seismic hazards to developers, interested parties and the general public through the Orange County Buyer Notification Program.

k. To ensure coordination and consistency between the the Orange County General Plan and the County Emergency Plan.

4. Implementation Programs

a. Public Education/Information

1) Action: Support the safety awareness efforts of the Emergency Management Division/County of Orange and other agencies through public information and educational activities.

2) Discussion: This program is intended to increase the Community's awareness of the need for disaster preparedness and provide educational assistance to residences and business.

3) New or Existing Program: Existing

4) Implementation Schedule: Ongoing

5) Responsible Agency: Orange County Fire Department/Emergency Management Division

6) Source of Funds: County General Fund

b. Comprehensive Erosion Control Program

1) Action: Support the comprehensive erosion control program efforts of the Environmental Resources Section of EMA to preserve Orange County beaches, cliffs, bays and estuaries, and agricultural lands.

2) Discussion: Individual erosion control programs include Agricultural Best Management Practices aimed at instructing farmers in land management practices; construction activity guidelines; the Foothill Basins Program, aimed at controlling erosion within the foothills; in-channel sediment control; upper bay control; and localized sediment control.

3) New or Existing Program: Existing/New (foothill basins)

4) Implementation Schedule: Ongoing

5) Responsible Agency: EMA-Environmental Resources Section

6) Source of Funds: County General Fund

c. Alquist-Priolo Program

1) Action: Continue to administer Alquist-Priolo requirements in designated special study zones as dictated in Orange County policy.

2) Discussion: As required under the 1972 Alquist-Priolo Special Studies Zone Act, the Office of the State Geologist delineated Special Study Zones which encompass potentially and recently active traces of four major faults (San Andreas, Calaveras, Hayward and San Jacinto). The Alquist-Priolo Special Study Zone is enforced to assure that homes, offices, hospitals, public buildings, and other structures for human occupancy are not built on or nearby active faults.

3) New or Existing Program: Existing

4) Implementation Schedule: Ongoing

5) Responsible Agency: a) California Division of Mines and Geology
b) EMA

6) Source of Funds: County General Fund

d. Orange County/Southern California Earthquake Preparedness Project (SCEPP)

1) Action: Continue to administer and expand implementation of the Orange County/SCEPP plan through the Public Information Office Committee and other organizations and agencies. Implementation should include public education awareness and response motivation.

2) Discussion: Guided by the California Seismic Safety Commission (SSC), SCEPP is concerned with a broad range of issues related to earthquake preparedness. There are two concepts associated with SCEPP:

   a) The project works directly with local governments, private industry and volunteer groups in a cooperative planning effort, and

   b) The SCEPP approach addresses the full range of earthquake strategies including mitigation, short-term prediction response, emergency response, and recovery.

3) New or Existing Program: New

4) Implementation Schedule: Ongoing

5) Responsible Agency: County Fire Department/Emergency Management Division

6) Source of Funds: County General Fund

e. Buyer Notification Program

1) Action: Continue the administration of the Buyer Notification Program as designated by the Board of Supervisors Resolution 82-1368. Land Use maps and planning information required by the guidelines shall be updated yearly by the subdivider/developer, or more often if the Director of Planning/EMA is aware of planning changes which affect the subdivision and makes the update a condition of his approval of the map.

2) Discussion: The Buyer Notification Program is intended to provide prospective home buyers with an appropriate overview of nearby planning and development. Key information denoted on Buyer Notification maps includes location of service facilities and life-sustaining infrastructure (e.g., fire stations, hospitals, utilities).

3) New or Existing Program: Existing

4) Implementation Schedule: Ongoing

5) Responsible Agency: EMA

6) Source of Funds: County General Fund

f. Intergovernmental Coordination

1) Action: Continue to develop intergovernmental relations toward achieving seismic and non-seismic protection goals, objectives and policies.

2) Discussion: With regards to handling seismic and non-seismic matters, Orange County cooperates with various levels of government including federal, state and local agencies. For instance, SCEPP is a state and federally funded effort to spur local jurisdictions to prepare for predicted and unpredicted "catastrophic" earthquakes in the Los Angeles metropolitan area. Continued and expanded cooperation among agencies will provide a coordinated effort toward achieving seismic and non-seismic protection funding, phasing and implementation.

3) New or Existing Program: Existing

4) Implementation Schedule: Ongoing

5) Responsible Agency: EMA

6) Source of Funds: County General Fund

g. Master Environmental Assessment (MEA)

1) Action: Apply mitigation measures to projects to reduce or eliminate impacts and maximize public safety through the use of the Master Environmental Assessment (MEA). Evaluate the expansion of MEA functions through the establishment of support systems (e.g., Block and Module Grid) to further provide methods to monitor the County's seismically or geologically hazardous areas.

2) Discussion: The MEA provides a resource data base to evaluate the potential impact of natural hazards which could affect siting of proposed development. Through the MEA, the impact of potential hazards created by the encroachment of development on the natural surroundings (e.g., areas prone to geologic hazard) can be identified and mitigated. In addition, the MEA will continually reinforce the intent and focus of the Safety Element's Implementation programs.

3) New or Existing Program: Existing

4) Implementation Schedule: Ongoing

5) Responsible Agency: Environmental Management Agency

6) Source of Funds: County General Fund

APPENDIX A
SAFETY ELEMENT
IMPLEMENTATION PROGRAMS

1. General Plan Consistency Program

   a. Action: Continue review of public and private projects for consistency with the Orange County General Plan as required by state law (Government Code Section 65400 et seq.). EMA policy and procedures and memorandums of understanding (MOUs) between functions will be revised and maintained.

   b. Discussion: This program satisfies the state law requirement that private and public projects must be consistent with the local government's general plan in order to be approved. All public works projects, development projects, discretionary permits, capital improvement plans and other private and public agency proposals are reviewed for consistency. The consistency review process will be conducted in accordance with the Advance Planning Program Manual prepared by EMA.

   c. New or Existing Program: Existing

   d. Implementation Schedule: Ongoing

   e. Responsible Agency: Environmental Management Agency

   f. Source of Funds: County General Fund

2. Intergovernmental Coordination and Public Participation

   a. Action: Intergovernmental coordination and public participation are existing components of the Advance Planning Program. Intergovernmental and intragovernmental coordination will be improved through increased cooperation and contact with federal, state, regional, countywide, and Orange County agencies which impact or influence Safety Element implementation. For a list of related planning agencies, see Appendix B.

   b. Discussion: This program facilitates both intra- and intergovernmental coordination and citizen participation in order to promote a greater understanding of the County General Plan. Appropriate governmental agencies, organizations and citizens are provided an opportunity to review documents and provide input during the General Plan revision and amendment process. Appropriate agencies are also consulted regarding and involved in many of the implementation programs defined in this document.

   c. New or Existing Program: Existing

   d. Implementation Schedule: Ongoing

   e. Responsible Agency: Environmental Management Agency

f. Source of Funds: County General Fund

3. Emergency Management Program

a. Action: Continue to implement emergency mitigation measures as outline in the California Emergency Plan, the California Master Mutual Aid Agreement, the Orange County Emergency Plan, and other emergency management plans. Coordination and implementation will be improved through increased contact with all agencies and organizations which impact or influence emergency response planning.

b. Discussion: This program focuses primarily upon the County's planned response to extraordinary emergency situations associated with natural disasters, technological incidents, and nuclear protection operations. Such disasters pose major threats to life and property and can impact the well-being of large numbers of people. To reduce the county's susceptibility and vulnerability to extraordinary emergency situations, continuing emphasis is placed on the following: emergency planning; training of full time, auxiliary and reserve personnel; public awarenes and education; and assuring the adequacy and availability of sufficient resources to cope with such emergencies.

Normal day-to-day emergencies and the well-established and routine procedures used in response to such emergencies are addressed in the implementation programs found in this element and in the daily procedures of the various responsible agencies.

Emergency Response

In the event of a disaster which generates the need for unusual emergency response, a pre-selected emergency management staff would be mobilized (see chart A-1). The staff would consist of representatives from all County agencies. Its purpose would be to organize overall emergency operations and coordination. The staff would be directed by an Operational Area Coordinator (OAC), who is the chairman of the Board of Supervisors (or successor). The OAC would be responsive to the directives of the County Governing Body.

The Emergency Operations Center (EOC) is designed to operate as the central control and coordination point for all County operations should a disaster or major emergency occur. Once activated, the heads and designated support staff from all County agencies, along with representatives from the State and Federal government and private relie groups will report to the EOC to gather information and begin the task of responding to the emergency or disaster. As there are various level of emergencies which can require the activation of the EOC, some emergency incidences do not necessitate activation or only necessitate operation of the facility with a limited emergency management staff.

Emergency functions to be performed by various agencies during an extraordinary emergency are outlined below. Additional emergency information may be found in the County's Emergency Response Plan maintained by the Emergency Management Division of the Orange County Fire Department.

1) **Recovery and Reconstruction**

Coordinator: County Administrative Officer

Staff Source: CAO, CSA, EMA, Assessor, County Counsel, Agricultural Commissioner, Auditor-Controller, Fire Department/EMD, Recorder, Treasurer-Tax Collector, other departments as needed.

Primary Tasks: Perform recovery and reconstruction planning; initiate planning during emergency response phase. Evaluate damage assessment reports. Provide advice on priority areas for emergency response in order to enhance short-term recovery activities and long-term reconstruction and mitigation activities. Post disaster, review possible mitigation actions to determine how the threat or consequences of the hazard could be reduced in the future.

2) **Emergency Communications**

Officer: Manager, GSA/Communications Division

Staff Source: Communications Division, GSA/Telephone, Fire Department/EMD, Sheriff.

Primary Tasks: Furnish communications service necessary for the County Emergency Organization to cope with the disaster. Provide, maintain and coordinate countywide public safety radio systems. Provide, manage and maintain Emergency Operations Center (EOC) communications facilities and system.

3) **Alerting and Warning**

Officer: Manager, GSA/Communications Division

Staff Source: Communications Division, GSA/Telephone, Fire Department/EMD, Sheriff.

Primary Tasks: Receive and disseminate alerts and warnings to designated County officials and agencies, all jurisdictions and public safety entities. Provide notification service for EOC activation.

4) **Situation Analysis and Reporting**

Officer: Director, EMA/Regulation

Staff Source: EMA/Regulation, EMA/Public Works (roads, bridges, dams, flood control facilities), GSA/Facilities and Real Property, Assessor, Fire/EMD, HCA/Environmental Health, Sheriff, CAO, Board of Supervisors, GSA/Communications (RACES).

Primary Tasks: Provide, manage and coordinate the Structural Safety and Damage Assessment System. Prioritize activities. Collect and consolidate initial reconnaissance information from departments which have units in the field. Assess safety and damage for both

public and private sectors. Identify and post structures and facilities which are unsafe.

Request damage information from other County departments which have response units in the field. Collect, evaluate, consolidate and display safety/damage assessment information for the Direction and Control (D&C) Group. Prepare consolidated damage reports, including dollar amounts, for the D&C Group and for transmittal to the State Office of Emergency Services (OES).

5) **Emergency Public Information**

Section 3-1-7 of the Orange County Code requires that all emergency information, press releases and public statements will be coordinated through a single entity. Until the County EOC is activated, the Emergency Public Information function will be the responsibility of the primary response agency, as appropriate to the type of emergency situation confronting the county. When the County EOC is activated, the County Public Information Officer (PIO) will be responsible for public information activities.

Officer: County PIO

Staff Source: Public Information Office, PIO's of all County departments, EMD, Board of Supervisors, Emergency Management Council.

Primary Tasks: Prepare and disseminate emergency public information. Establish an Emergency Information Center for the news media. Prepare information for the Rumor Control Center in the EOC. Provide advice on news media and public information in general. Accredit and accommodate out-of-area news media.

6) **Radiological Protection**

Officer: County Health Officer

Staff Source: HCA/Radiological Health, EMD, Fire Department, GSA/Communications, Agricultural Commissioner, other County personnel trained as radiological monitors.

Primary Tasks: Manage the radiation monitoring and reporting system. Evaluate and disseminate radiation information. Assess radiation threat. Provide technical guidance on measures to counter the effects of radiation.

7) **Fire and Rescue Operations**

Coordinator: Director of Fire Services

Staff Source: Fire Department (career and paid call), Fire Explorers, EMA/Public Works, Sheriff, HCA/Public Health and Medical, GSA/Waste Management (heavy equipment).

Primary Tasks: Suppress and prevent fires. Conduct field emergency medical care. Protect life and property at hazardous material spills and releases. Conduct fire-related rescue, medical-related rescue, hazardous material-related rescue, and heavy rescue (collapsed buildings, etc.).

8) **Law Enforcement and Traffic Control Operations**

Coordinator: Sheriff-Coroner

Staff Source: Sheriff Department, Sheriff Reserves and Explorers, Marshal, District Attorney, Probation, Public Defender, Courts, EMA/Public Works, and Fire Department.

Primary Tasks: Protect life and property. Enforce laws, rules and regulations. Provide security for areas, facilities and resources. Control vehicular traffic and pedestrian movement. Enforce vehicular traffic laws and regulations. Coordinate countywide vehicular traffic controls.

9) **Medical Operations**

Coordinator: Director, Health Care Agency

Staff Source: HCA, Fire, Sheriff, CSA.

Primary Tasks: Provide medical care and treatment for ill and injured persons, and provide crisis intervention services. Manage medical services, activities, facilities and resources. Provide for transportation of casualties and medical resources. Coordinate activities of private medical facilities. Provide for relocation of patients as necessary. Coordinate activation and operation of Casualty Collection Points.

Provide advice and guidance on the mental health aspects of a disaster. Provide preventive mental health services (for both public and emergency responders). Provide mental health services at all disaster-related facilities and sites. Treat and rehabilitate victims of post-disaster psychiatric trauma. Provide specialized mental health services for special population groups (unaccompanied children, aged, disabled, etc.).

10) **Public Health Operations**

Coordinator: Director, Health Care Agency

Staff Source: HCA, Fire, EMA/Regulation, Agricultural Commissioner.

Primary Tasks: Provide public health and environmental sanitation services. Determine and control public health hazards. Prevent and control communicable disease. Mitigate effects of radiological, biological and chemical spills or emissions.

11) **Coroner Operations**

Coordinator: Sheriff-Coroner

Staff Source: Sheriff-Coroner/Forensic Services, other Sheriff personnel, Fire, HCA.

Primary Tasks: Collect, identify, certify cause of death and dispose of fatalities, and process their personal effects. Provide evidence and instructions on handling of fatalities.

12) **Care and Shelter Operations**

All peacetime care and shelter operations will be performed in coordination and cooperation with the American Red Cross or by assisting the Red Cross.

Coordinator: Director, Social Services Agency

Staff Source: SSA, CSA, GSA/Real Estate, EMA/Parks and Recreation, EMA/Regulation, HCA/Environmental Health, Fire Department.

Primary Tasks: Assess mass care needs and housing requirements. Provide shelter, food, clothing and registration for impacted persons. Manage and operate evacuation centers, reception centers, mass care centers, and public shelters, including fallout shelters. Inventory and allocate temporary lodging. Register displaced persons, casualties and other victims. Provide locator services and handling of disaster welfare inquiries. Provide for financial assistance, rehabilitation and counseling services. Provide specialized services as required for the care of special population groups (unaccompanied children, aged, disabled, etc.).

13) **Movement Operations**

Coordinator: Sheriff-Coroner

Staff Source: Sheriff, Sheriff Reserves and Explorers, HCA/Animal Control, EMA/Public Works, GSA/Communications, GSA/Transportation, Fire Department, PIO, other departments as needed.

Primary Tasks: Provide for evacuation and relocation of persons from threatened or affected areas and buildings to safer, lower risk areas.

14) **Rescue Operations**

Coordinator: Sheriff-Coroner

Staff Source: Sheriff, Fire, Sheriff Reserves and Explorers, EMA/Public Works, HCA/Public Health and Medical.

Primary Tasks: During disasters, provide coordinated light search and rescue operations for the location, safe removal and immediate care of endangered, entrapped, injured and isolated persons. Assist in heavy rescue operations.

15) Construction, Engineering and Utilities Operations

Coordinator: Director, Environmental Management Agency

Staff Source: EMA, Fire, Sheriff (for inmates), GSA/Waste Management (heavy equipment), Special Districts governed by the Board of Supervisors.

Primary Tasks: Restore, maintain and operate essential facilities. Clear and dispose of debris to abate hazards. Clear roads and bridges for route recovery. Repair and construct emergency facilities, including expedient shelters. Repair or reinforce damaged roads and bridges. Provide supervision over all emergency construction. Demolish or otherwise abate hazard of damaged buildings and structures which pose a threat to pubic safety. Conduct flood fighting operations. Coordinate the continued operation or restoration of electric, gas and water utilities, and coordinate redirection of services as required.

16) Resources and Support Operations

Coordinator: Director, General Services Agency

Primary Tasks: Assisted by the following Support Officers, manage and coordinate the provision, allocation, distribution and use of essential resources and services to support emergency operations.

17) Military Emergency Operations

In the event of an extraordinary emergency situation requiring an unusual emergency response, the three military air installations within Orange County may be available to provide significant assistance. Marine Corps Air Stations, El Toro and Tustin and Los Alamitos Army Airfield each may provide additional communication centers, medical facilities (Los Alamitos houses an emergency field hospital) and evacuation equipment in the forms of helicopters, aircraft and vehicles. Military personnel can also be mobilized to augment the ranks of emergency personnel. Also, each military installation maintains its own emergency response plan that addresses on-and-off post emergency incidences which could be drawn upon in a County disaster situation.

APPENDIX B

Related Planning Agencies

A. Overview

Intergovernmental coordination facilitates cooperative planning with federal, state, regional, and Orange County agencies involved in Safety Element implementation or which influence the implementation of this element by their actions. This appendix identifies federal, state, regional and countywide agencies involved in General Plan implementation and their respective responsibilities.

B. Inter-Agency Coordination

1. Federal Agencies

a. Army Corps of Engineers:

(1) Development and distribution of flood and dam inundation maps
(2) Flood Control facilities
(3) Major public works projects

b. Department of Defense (Tustin and El Toro Marine Corps Air Stations and Los Alamitos Army Airfield):

(1) Airport/land use compatibility
(2) Interface with County noise control and abatement programs

c. Department of Transportation:

(1) Intra- and Interstate transport of hazardous materials

d. Environmental Protection Agency:

(1) Environmental Review Process
(2) Air quality, hazardous waste, and water quality programs

e. Federal Aviation Administration:

(1) National aircraft/air carrier administration

f. Federal Emergency Management Administration:

(1) Administration and oversight of hazardous material legislation
(2) Main federal government contact during natural disasters and nuclear defense emergencies

g. Federal Insurance Administration:

(1) Delineation of special flood hazard areas, risk premium zones and floodways through the Flood Insurance Rate Map (FIRM) and Flood Boundary and Floodway Map

h. Nuclear Regulatory Commission:

(1) Oversight of nation's nuclear power plant facilities
(2) Inspection of nuclear facilities

2. State Agencies

a. California Energy Commission:

(1) Responsible for development and conservation of California's energy resources

b. California Resources Agency: Umbrella agency for State's major environmental agencies, including:

(1) California Air Resources Board:

(a) State air pollution control agency responsible for implementation of federal air pollution acts

(2) California Coastal Commission:

(a) Coordinates implementation and administration of the Coastal Act in Orange County

(3) California Coastal Conservancy:

(a) Land acquisition and management in conformity with the Coastal Act on a local coastal program (LCP)

(4) Department of Conservation:

(a) Mineral and geologic resource planning

(5) Department of Water Resources:

(a) Develop, protect, conserve and manage California's water resources

c. California Seismic Safety Commission:

(1) Oversight of Southern California Earthquake Preparedness Project (SCEPP)

d. California State Fire Marshall's Office (Hazardous Liquid Pipeline Division):

(1) Compliance review for inspection and enforcement; pipeline failure and investigation; and, pipeline training and certification

e. California Waste Management Board:

(1) Waste management regulation and funding programs

f. Department of Health Services:

(1) Hazardous materials, hazardous waste, infectious wastes, and radioactive materials control

g. Department of Mines and Geology:

(1) Development of Alquist-Priolo Special Study Zone maps
(2) Administration of geologic legislation

h. Department of Transportation - CalTrans :

(1) Division of Aeronautics responsible for heliport and helipad location and development

i. Office of Emergency Services:

(1) Administration of state emergency plans and preparation
(2) Coordinate statewide emergency operations including mutual aid

j. Office of Planning and Research:

(1) State clearinghouse for environmental impact reports (EIRs)
(2) Prepares guidelines for the preparation of mandatory elements of the General Plan (except the Housing Element)

k. Public Utilities Commission:

(1) Lead agency on major energy facility (power plant) siting

l. State Water Resources Control Board:

(1) Responsible for water rights and water pollution control
(2) Enforces water quality standards and administers federal clean water laws

3. Regional Agencies

a. Aviation Work Program Committee:

(1) Regional air carrier capacity

b. Interjurisdictional Planning Committee:

(1) Coordinate emergency plans, training and exercises
(2) Resolve matters of mutual concern

c. Joint Powers Authority:

(1) Oversight of Hazardous Materials Management Plan

d. South Coast Air Quality Management District:

(1) Air Quality management activities

e. Southern California Association of Governments (SCAG):

(1) Coordination of regional water quality and energy planning efforts
(2) Clearinghouse for federally funded projects
(3) Regional Air Quality, Transportation, and Housing Plans
(4) Transportation Improvement Plans
(5) Regional Growth Policy

f. Southern California Edison:

(1) Operation of San Onofre Nuclear Generating Station (SONGS)

g. Southern California Hazardous Waste Management Authority

(1) Coordination and implementation of hazardous waste management programs and siting of facilities

h. Water Districts:

(1) Metropolitan Water District of Southern California
(2) Orange County Water District
(3) Coastal Municipal Water District
(4) California Water Quality Control Board:
    (a) Designates regional boards which are responsible for the maintenance of water quality

4. Local Agencies

a. City Engineers Flood Control Advisory Committee (CEFCAC):

(1) Flood control project recommendations and prioritization of project proposals submitted by Flood Control District

5. Private Organizations

a. Community/Homeowners' Associations

b. Institute of Nuclear Power Operations (INPO):

(1) Establishes industry-wide standards in nuclear power operations
(2) Conduct independent evaluations to assist utilities in meeting industry-wide standards

c. Nuclear Safety Analysis Center:

(1) Provides updated technical information on nuclear safety to affected industry sources

d. Public-interest organizations (e.g., League of Women Voters)

APPENDIX C

LIST OF ACRONYMS/ABBREVIATIONS

AELUP	Airport Environs Land Use Plan
AFIS	Areawide Fiscal Impact System
AICUZ	Air Installation Compatible Use Zone
ALUC	Airport Land Use Commission
AWPC	Aviation Work Program Committee
BMP	Best Management Practices (Agricultural)
CAA	Community Analysis Areas
CAO	County Administrative Officer
CDMG	California Division of Mines and Geology
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COE	Corps of Engineers (U.S. Army)
CSA	Community Services Agency
DMP	Development Monitoring Program
DOHS	Department of Health Services
DOT	Department of Transportation
EMA	Environmental Management Agency
EMC	Emergency Management Council
EMD	Emergency Management Division
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
EPZ	Emergency Planning Zone
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
GSA	General Services Agency
HMPO	Hazardous Materials Program Office
HMTF	Hazardous Materials Task Force
HWCA	Hazardous Waste Control Act
HWMP	Hazardous Waste Management Plan
INPO	Institute of Nuclear Power Operations
IPC	Interjurisdictional Planning Committee
IPZ	Ingestion Pathway Zone
JWA	John Wayne Airport
MCAS	Marine Corps Air Station
MOU	Memorandum of Understanding

NPL	National Priority List
NRC	Nuclear Regulatory Commission
NSAC	Nuclear Safety Analysis Center
OCHCA	Orange County Health Care Agency
OCP-85	Orange County Preferred - 1985 (Demographic Projections)
OCSCD	Orange County Sheriff - Coroner Department
OES	Office of Emergency Services
PEZ	Public Education Zone
PIO	Public Information Officer
PSF	Public Services and Facilities (Element)
RCRA	Resource and Conservation Recovery Act
RSA	Regional Statistical Area
SCAG	Southern California Association of Governments
SCEPP	Southern California Earthquake Preparedness Project
SONGS	San Onofre Nuclear Generating Station
SSA	Social Services Agency
SSC	Seismic Safety Commission
TAZ	Traffic Analysis Zone
UST	Underground Storage Tank

APPENDIX D

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APPENDIX E

RESOLUTION OF THE BOARD OF SUPERVISORS

ORANGE COUNTY, CALIFORNIA

August 26, 1987

On motion of Supervisor Riley, duly seconded and carried, the following Resolution was adopted:

WHEREAS,the County of Orange has an adopted General Plan; and

WHEREAS, pursuant to the Planning and Zoning Law of the State of California, this Board has reviewed the publicly-initiated Safety Element amendment 1987-1 (S 87-1); and

WHEREAS, orientation sessions were held by the Planning Commission on this element amendment on February 24 and April 7, 1987; and

WHEREAS, in compliance with the Planning and Zoning Law of the State of California, public hearings were held by the Planning Commissio on this element amendment on May 19, July 1 and 28, 1987; and

WHEREAS, Negative Declaration No. IP 87-027 was prepared for the Safety Element Amendment 1987-1 (S 87-1); and

WHEREAS, this Board has duly considered Safety Element Amendment 1987-1 (S 87-1) and finds that the public interest, health, comfort, convenience, safety, order, general welfare and peace will be more adequately served thereby; and

WHEREAS, this Board has complied with the State and County environmental procedures by reviewing and considering Negative Declaration No. IP 87-027.

NOW, THEREFORE, BE IT RESOLVED that this Board has evaluated Negative Declaration No. IP 87-027 and has determined it to be adequate and complete for this project and satisfies the requirements of the

California Environmental Quality Act.

BE IT FURTHER RESOLVED, that the Board of Supervisors of the Cou of Orange hereby adopts Safety Element Amendment 1987-1 (S 87-1) of the General Plan as recommended by the Orange County Planning Commiss

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AYES: SUPERVISORS THOMAS F. RILEY, DON R. ROTH, HARRIETT M. WIEDE AND ROGER R. STANTON

NOES: SUPERVISORS NONE

ABSENT: SUPERVISORS GADDI H. VASQUEZ

STATE OF CALIFORNIA)
) ss.
COUNTY OF ORANGE)

I, LINDA D. ROBERTS, Clerk of the Board of Supervisors of Orange County, California, hereby certify that the above and foregoing Resolution was duly and regularly adopted by the said Board at a regular meeting thereof held on the 26th day of August, 1987, and passed by a unanimous vote of said Board members pres

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 26th day of August, 1987.

LINDA D. ROBERTS
Clerk of the Board of Supervisors
of Orange County, California

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